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UNITED STATES OF AMERICA
ENVIRONMENTAL PROTECTION AGENCY

PB 198 692-F

Dear Fellow Environmentalist:

On Friday, July 16, 1971, Region V of the U. S. Environmental Protection Agency released a final Environmental Impact Statement on the North Shore Sanitary District sewerage project. Due to your expressed interest, we have enclosed a copy for your information.

Additional copies are limited and will be supplied only in cases of practical need and upon written request to this office.

Sincerely,

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JUL 23 1971

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CLEAN WATER

U.S. ENVIRONMENTAL PROTECTION AGENCY

final ENVIRONMENTAL IMPACT STATEMENT july 1971

For: SEWERAGE PROJECT WPC-Ill.-754
NORTH SHORE SANITARY DISTRICT
WAUKEGAN, ILLINOIS

By: REGION V
CHICAGO, ILLINOIS

FINAL ENVIRONMENTAL IMPACT STATEMENT

FOR: Sewerage Project Number WPC-Ill.-754
Submitted by North Shore Sanitary District,
Waukegan, Illinois

BY: Region V
Federal Environmental Protection Agency

SUMMARY

1. Date of Statement---------------------------------------June 21, 1971

2. Status of Environmental Statement------------------------Final

3. List of Departments and Agencies From which Comments on the Draft Environmental Impact Statement Have Been Received: 1/

Federal

Department of Agriculture
Department of Commerce
Environmental Protection Agency
Department of Interior
Department of Health, Education and Welfare
Department of Transportation
Department of Army
Department of Housing and Urban Development

State

State of Illinois Pollution Control Board
League of Women Voters of Illinois
Technical Institute of Illinois

Local

North Shore Sanitary District
Lake Michigan Protectors of the Environment
Businessmen for the Public Interest
Northeastern Illinois Planning Commission
Campaign Against Pollution
Society Against Violence to the Environment
Chicago Horticultural Society
Students Organized for Survial
Open Lands Project
Forest Preserve District of Cook County, Illinois
Lake Michigan Interleague Group Participants
League of Women Voters of Glencoe, Illinois
East Skokie Drainage District
League of Women Voters of Highland Park, Illinois
Village of Hodgkins
Riverside Lawn Improvement Association
Environmental Defense Fund
Deere Park Neighborhood Association
WBBM-TV, Richard Kesterkamp, Editorial Director
Congregation Solel
Associated Allergists, Ltd.
B'Nai Torah - Highland Park Reform Temple
Trinity Church
North Shore Radiologist, S. C.
North Suburban Synagouge Beth EC
Office of the Chairman-Board of Supervisors, Waukegan

1/ Comments from all interested parties have been included in Appendix A.

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4. Type of Proposed Action--------------------------------Administrative

NARRATIVE

On April 21, 1971 a Draft Environmental Impact Statement was released by Region V, Water Program Office for a sewerage project involving a construction grant application that was submitted by the applicant, North Shore Sanitary District (NSSD), under Section 8 of the Federal Water Pollution Control Act. When completed, the sewerage project will provide 55 million gallons per day (MGD) of sewage treatment capacity to serve the eastern portion of Lake County, Illinois.

Pursuant to guidelines prepared by the Council on Environmental Quality and procedures developed in the Water Program Office, Environmental Protection Agency, a final Environmental Impact Statement is required to fulfill existing obligations under the National Environmental Policy Act of 1969. 2/

A grant offer from the Regional Water Program Office was made on April 22, 1970, to the NSSD to fund this project for improvement to the water quality of the area and meet anticipated treatment needs. An environmental assessment was requested of the applicant subsequent to the grant offer and a full review of the project was then undertaken. This final Environmental Impact Statement is the product of the previous review and analysis of all comments received on the original draft statement.

The eastern Lake County area, at present, has a sewered population of 200,000 individuals and by 1990 will have an estimated sewered population of approximately 350,000 individuals. It is basically residential in character with light to moderate industry and commerce located in this area. Sewage treatment facilities now in operation by the NSSD consist of seven plants at sites along Lake Michigan and one treatment plant located on the Skokie River.

In addition to requiring more capacity to meet present and anticipated needs of the population, the plants now operating on the Lake Michigan shore must, by July 1, 1972, provide either additional and improved treatment or be phased out and have their discharges diverted to inland rivers, by mandate of the Lake Michigan Enforcement Conference. The present project calls for diverting inland about 29 MGD of sewerage from the lakeside plants.

2/ Under subsequently adopted EPA procedures, effective 1971, WQO construction grants are now required to have certified over-all water quality management plans for meeting area sewerage needs. The plan will be required to designate sites for facilities and describe general capacity, concept and design. This plan will be discussed in a draft environmental impact statement and approved after comments are received and a final statement developed. In implementing a particular aspect of the plan through an individual construction grant, there will not, in most cases, then be a need for a second environmental impact statement.

The overall project of the NSSD, approved by the Illinois Environmental Protection Agency and endorsed by the Illinois Pollution Control Board, calls for the construction of a new treatment facility at Gurnee and the expansion and renovation of present plants at North Chicago, Waukegan and Clavey Road. With the exception of the North Chicago location, these plants will feature advanced waste treatment (AWT) and nutrient removal processes, thereby meeting the requirements of applicable water quality standards. 3/

The central impact of the project proposed by the District will result from full expansion of the Clavey Road treatment plant to 18 MGD and adverse effects are anticipated from the on site open retention basin that will be used to hold excess collection sewer flows in large open chambers during periods of wet weather, although other adverse impacts are identified. Located within 150 yards of the present treatplant units are several homes that are part of a much larger residential development located in the immediate area. The residents in and around the area of the Clavey Road facility object strenuously to the retention basin and plant expansion claiming that a probability for transmission of harmful viruses and pathogenic bacteria exists as well as the continual escape of unpleasant odors. In total, the full expansion of the site would encompass 45 acres. The physical size of the plant will not esthetically enhance the existing residential character of the neighborhood.

Within the close environs of the Clavey Road plant, there have been built places of worship, a school, a golf course, and a large land reserve that is being developed for a botanical garden which will add appreciably to the conservation resource base of the general area.

COMMENTARY ON DRAFT STATEMENT

The comments received indicate that the plant size at Clavey Road and the question of covering for the retention basin are still focal points of disagreement. After reviewing our initial position

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3/ Advanced waste treatment will remove trace organics and residual suspended solids and will under design specifications achieve an effluent quality in the range of 4 mg/L biochemical oxygen demand (BOD) and 5 mg/L suspended solids (SS). Nutrient removal will consist of nitrification - denitrification for nitrogen control and will be in part a function of the advanced waste treatment units. Waste pickle liquor is being studied by the District for achieving phosphorous removal. However, should results indicate other phosphorous removal techniques could be more desirable, their study and incorporation into the treatment process should be expeditiously carried out. The Skokie River and Des Plaines River will serve as the receiving waters and require such high degrees of treatment by nature of their respective intrastate and interstate water quality standards.

and the comments on the draft statement, we are persuaded that the retention basin should be covered; we believe, however, that an 18 MGD plant at Clavey Road is the most viable solution.

Under the National Environmental Policy Act, EPA is charged with adverting to health, esthetics, and land management in its decision-making. Given these considerations our draft statement proposed an amendment in project design to provide a smaller 12 MGD plant at Clavey Road and a larger plant at Des Plaines. In determining a long-range need for an additional facility, it appeared to us that NEPA goals, particularly land-usage and esthetics would be furthered by a smaller Clavey Road plant that could more likely be phased out over time, thus committing less acreage to industrial usage. A small plant, moreover, was also in our view less of a visual detraction in the Clavey community.

After reviewing the comments on the draft statement we are persuaded that our solution is not the best alternative. First, the comments suggest that the difficulty of acquiring land and financing a Des Plaines site could be an obstacle. Second, we are now convinced that it is no more difficult to retire an 18 MGD plant than a 12 MGD plant. On the assumption then that there will be a plant at Clavey Road, we cannot say that there is a significant esthetic difference between a 12 MGD and 18 MGD sewage treatment plant.

We believe at this juncture a word is appropriate as to our view of EPA's general NEPA obligation to further intelligent land-usage. At the outset, it must be made clear that this is a statutory obligation and we must give land management values equal consideration to other values in the environmental equation. How it is weighed depends on the circumstances and the comments. On matters like land-usage particularly we must respect State choices if it is clear that local authorities have considered land management values. We cannot, of course, abdicate our own obligation to weigh these values independently, but we can and will defer to local choices whenever they appear to have adverted to the problem and reach a result that is in a zone of reasonableness. While land management concerns were not a primary consideration in the State proceeding, they were not entirely overlooked and the views of the State have been made known through the comments of local authorities. The State's proposal for 18 MGD capacity at Clavey Road is within the zone of reasonableness.

The covering for the retention basin, also a matter of controversy, represents a different problem. The possibility of odors and aerosal carriage of virus--however remote--is one that cannot be tolerated. Experiments with new techniques show that there may soon be engineering and design methods and landscape technique for odor control that would insure that treatment facilities are unobtrusive. We believe, however, that the presumption here is that there be wholly adequate tested controls available. Given all the evidence and the proximity of the Clavey plant to the Highland Park homes, the downwind tendency of the area, we feel that the retention basin should be covered. This is not an Agency position in favor of covering all cases, but simply a decision on the particular facts before us.

We believe utilization of some advanced waste treatment processes at Clavey Road is necessary in the immediate future, as well as provision for additional stormwater retention and/or treatment at Waukegan and North Chicago.

It is recognized that the effluent lagoon presently near completion will serve for an interim period of time to provide somewhat improved treatment at the Clavey Road plant. As such, it is advised that operation of this lagoon be maintained only as long as deemed necessary, and in any event, not beyond completion of the newly required advanced waste treatment units.

It is further concluded that the NSSD must pursue obtaining another site for construction of a sewage treatment plant on or near the Des Plaines River so that areawide sewerage needs in the southern portion of the District can be adequately handled beyond 1980. The design of such a facility should be of appropriate capacity and provide compatibility with the total environment of the general area.

INTRODUCTION

I. DESCRIPTION OF APPLICANT'S PROJECT

This project, located in eastern Lake County, Illinois, involves the construction of one new sewage treatment plant, expansion and upgrading of three others, and the phasing out of five treatment plants located on the Lake Michigan shoreline. Figure 1 delineates the total service area of the District, separate service areas within the NSSD and the nine affected sewage treatment facilities. The District presently serves a population of about 200,000 people, who reside in a largely residential environment. Industrial development is concentrated in the vicinity of Waukegan and North Chicago.

The project, as submitted to the Water Program Office of the Environmental Protection Agency, can be subdivided into two sectors as follows.

A. The Northern Sector. The lakeside secondary plants at North Chicago and Waukegan are organically overloaded, and the latter is also hydraulically overloaded. Projected improvements include: 1) expansion of the North Chicago plant, 2) additional facilities at the Waukegan plant to provide primary, secondary, and advanced waste treatment, nutrient removal, and chlorination, 3) additional interceptor sewers in the area served by the Waukegan plant, 1/ 4) a pumping station, force main, 2/ and sewer to convey the effluent from the Waukegan plant to the Des Plaines River, 5) sedimentation and chlorination facilities to treat

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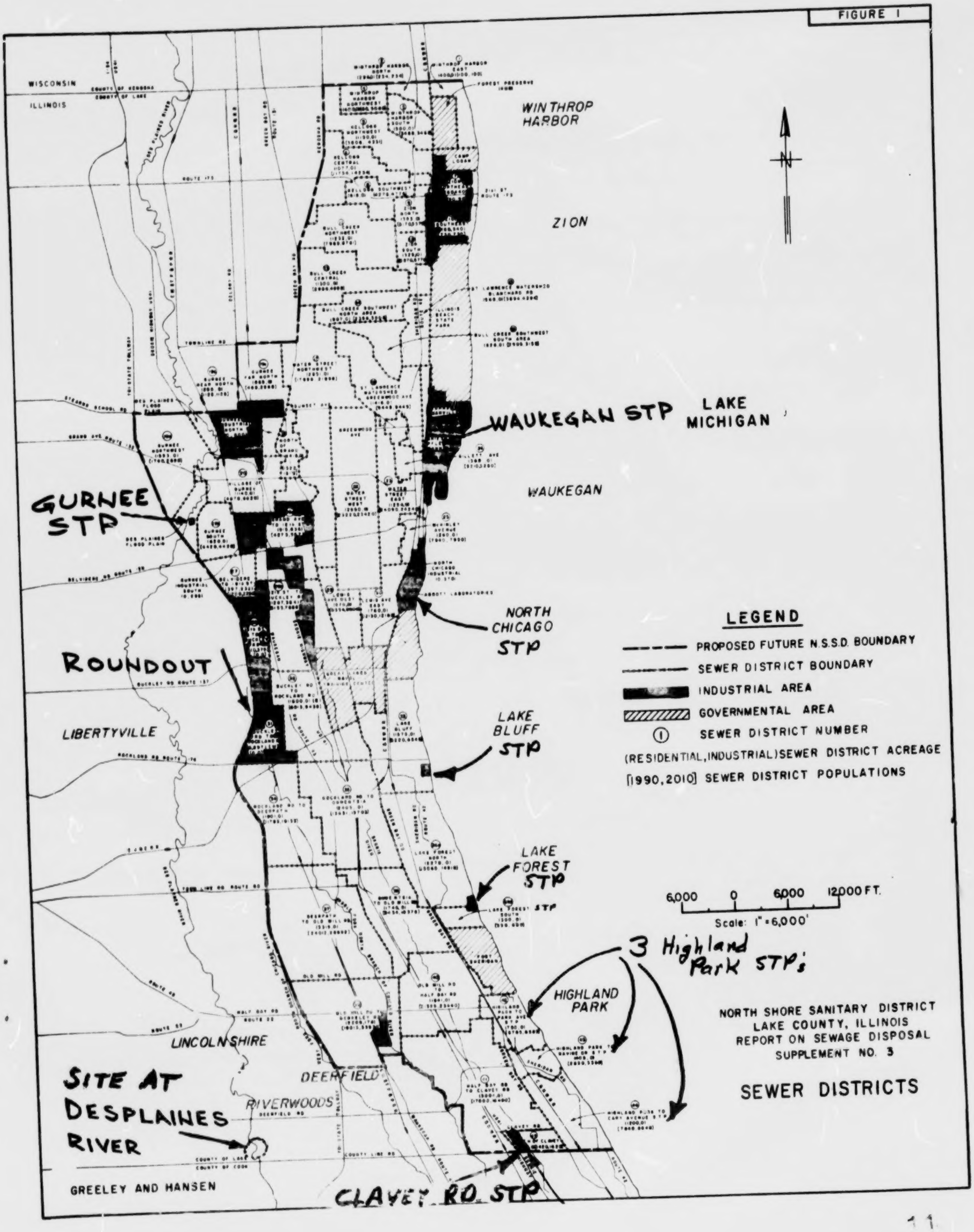
1/ Interceptors are large sewer mains which collect sewage from smaller mains.

2/ Force mains are pipelines which convey pumped sewage.

FIGURE 1


WISCONSIN
ILLINOIS
WINTHROP HARBOR
ZION
LAKE MICHIGAN
WAUKEGAN
NORTH CHICAGO
LAKE BLUFF
LAKE FOREST
HIGHLAND PARK
LIBERTYVILLE
LINCOLNSHIRE
DEERFIELD
RIVERWOODS
WAUKEGAN STP
GURNEE STP
ROUNDOUT
NORTH CHICAGO STP
LAKE BLUFF STP
LAKE FOREST STP
3 Highland Park STP's
SITE AT DESPLAINES RIVER
CLAVEY RD STP
N
LEGEND
PROPOSED FUTURE N.S.S.D. BOUNDARY
SEWER DISTRICT BOUNDARY
INDUSTRIAL AREA
GOVERNMENTAL AREA
① SEWER DISTRICT NUMBER
(RESIDENTIAL, INDUSTRIAL) SEWER DISTRICT ACREAGE
[1990, 2010] SEWER DISTRICT POPULATIONS
6,000 0 6,000 12,000 FT.
Scale: 1" = 6,000'
GREELEY AND HANSEN

NORTH SHORE SANITARY DISTRICT
LAKE COUNTY, ILLINOIS
REPORT ON SEWAGE DISPOSAL
SUPPLEMENT NO. 3

SEWER DISTRICTS

storm overflows 3/ at Winthrop Harbor, Zion, Waukegan, North Chicago, and Highwood, 6) a new sewage treatment plant near Gurnee which will discharge directly into the Des Plaines River and will provide primary, secondary, and advanced waste treatment, nutrient removal and chlorination for sewage from Gurnee and vicinity, the Upper Skokie Valley, and North Chicago, and 7) pumping stations, force mains, and sewers to convey the sewage to the Gurnee plant.

B. The Southern Sector. The original schedule provides for the phasing out of the five small, southermost lakeside primary plants (Lake Bluff, Lake Forest, Park Avenue, Ravine Drive, and Cary Avenue) which are all hydraulically overloaded. All storm overflows at these locations will likewise be eliminated. Other changes include: 1) adding pumping stations, force mains, and sewers to convey sewage from the five lakeside plants and the southern part of theDistrict to the Clavy Road sewage treatment plant, 2) additional facilities at the Clavey Road sewage treatment plant to provide primary, secondary and tertiary treatment and chlorination for an average sewage flow of 18 MGD from the souther sector of the District, 4/ 3) a pumping station, force main, sewer to convey the effluent from the Clavey Road sewage treatment plant to the Des Plaines River and 4) sedimentation and chlorination facilities to treat storm overflows at Clavey Road.

3/ Storm overflows occur in sewerage systems which collect both sewage wastes and urban storm runoff in a common pipe.

4/ An effluent lagoon is being constructed as part of the new facility with the original purpose of improving final effluent quality by two to three percent. The lagoon was necessary to meet the applicable water quality standards under provisions of the original project which have since been modified by the Illinois Pollution Control Board (IPCB).

C. Discussion. The degree of treatment for plants remaining in operation will be upgraded to include advanced waste treatment in most instances. As the project was originally submitted to this office, only two facilities - located in North Chicago and Highland Park (Clavey Road) - will be retained that will not provide a high degree of treatment. North Chicago will provide pre-treatment before transfer to another plant for additional treatment and nutrient removal. The Clavey Road facility would, by the applicant's proposal, provide secondary and tertiary treatment for waste flows from its own service area as well as the additional wastes diverted from the five lakeside plants. The plants which will be phased out do not provide secondary treatment at present. After the five lakeside plants are eliminated, stormwater overflows will likewise be eliminated.

D. Present and Projected Capacities of Treatment Plants. The collection sewers which serve the Highland Park area discharge into three plants - Park Avenue, Ravine Drive and Cary Avenue. The City is taking corrective measures to reduce infiltration into these sewers. The present total flow into these three plants often exceeds 3 MGD. These three plants, together with the Lake Bluff and Lake Forest facilities will be discontinued and their wastes pumped to the Clavey Road plant. The North Chicago plant's capacity of 3.35 MGD will be expanded to 4.26 MGD by 1990 and it will provide only pre-treatment before the flows are pumped to the new Gurnee facility. The Waukegan plant's capacity is 9.5 MGD and it will be expanded to treat 20 MGD. At the Clavey

Road plant, the design capacity will be increased from the present 4.5 MGD to 18 MGD. The new Gurnee facility will now have a capacity of 17.25 MGD 5/.

E. Stream Loadings and Treatment Plant Discharges. As noted, there will be three major treatment plants discharging effluent into two rivers. The combined loading to the streams will total 1,831 pounds per day of biochemical oxygen demand (lb./BOD/d) and 2,290 lb./d of suspended solids. Specific discharges and relative loadings are identified below:

Location Sewage Treatment Plant (STP)	Receiving Waters	1990 Flow Through STP	lb/BOD/d	lb/ss/d
1. Waukegan	Des Plaines River	20 MGD	663	829
2. Clavey Road	Skokie River	17.8 "	593	742
3. Gurnee	Des Plaines River	17.25"	575	719
	Total to Des Plaines River		1,238	1,548
	Total to Skokie River		593	742

These figures reflect the calculated design effluent quality subsequent to advanced waste treatment at each location and will be in complaince with permissable stream loadings under applicable water quality standards.

II. IMPLEMENTATION NEEDS

The project resulted from requirements set by the Lake Michigan Enforcement Conference and from the State-Federal water quality standards.

5/ The expansion in capacity is due to the inclusion of the Great Lakes Naval Training Center and a small industrial load which, since release of the draft statement, will now be tributary to the Gurnee facility.

Interim chlorination facilities have been provided at the seven lakeside plants as directed. Other pertinent requirements applicable to this project are: 1) secondary treatment of effluents discharged to Lake Michigan by July,1972, 2) phosphorus removal of effluents discharged to Lake Michigan by December,1971, 3) advance waste treatment and chlorination of effluents discharged to the Des Plaines River where necessary under interstate water quality standards, 4) nutrient removal of effluents discharged into the Des Plaines River and Skokie River by 1977, or sooner if practicable methods are developed, and 5) advanced waste treatment and nutrient removal of Clavey Road effluents when discharged directly to the Skokie River 6/.

III. FINANCIAL ASPECTS

On February 4, 1970, the Illinois Sanitary Water Board (now the Illinois Environmental Protection Agency) certified this project. A Federal construction grant under Section 8 of the Federal Water Pollution Control Act was offered for the project on April 22, 1970, in the amount of $11,550,000 and was accepted by the District on May 13, 1970. The offer was based on project cost estimates related to a bond referendum passed May 4, 1968, of $35 million and a 33% Federal Grant.

6/ This requirement was ordered on March 31, 1971 by the Illinois Pollution Control Board after submission of the project application to this office.

No money has been paid to the NSSD although such payment has been requested. Moreover, by Order dated February 11, 1971, by the Commissioner of the Water Quality Office, EPA, Federal payments are suspended until such time as the Clavey Road situation is resolved. At present only $8.8 million worth of contracts have been signed because of litigation proceedings involving the Clavey Road treatment plant 7/.

IV. NEED FOR ENVIRONMENTAL ASSESSMENT

The applicant's proposal is a large scale waste treatment plan encompassing many sanitary facilities. The impact of the project was determined to be of significant magnitude to warrant an Environmental Assessment. The applicant was requested to prepare this assessment and on December 14, 1970, the Environmental Assessment was received in the Regional Office.

V. ADDITIONAL LOCAL BACKGROUND

Numberous groups have expressed support for the project as proposed, including many State agencies and local communities. The City of Highland Park raised objections to the Clavey Road facility and on January 6, 1970, the City's Plan Commission recommended - after extensive hearings - that it . . . "cannot recommend approval of the petition as submitted by the NSSD." The City was concerned that adequate protection

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7/ At issue in litigation are zoning, the validity of the bond issue, nuisance, air pollution, mandamus action, and civil rights were filed. On November 3, 1970, residents in the area of Clavey Road sewage treatment plant filed a complaint for injunction against the Secretary of the Interior and the Regional Director of the Water Quality Office, Region V, EPA to prevent payment of Federal money to the project and to seek other relief as deemed proper by the court. This complaint was dismissed on June 8, 1971 pending the outcome of this Agency's final Environemntal Impact Statement.

had not been provided at the Clavey Road plant against odors and possible airborne infection.

On February 9, 1970, the City of Highland Park issued a special permit to NSSD conditioned on providing specific measures for maximum airborne control. Following litigation proceedings between the City and the District on this matter, the Clavey Road proposal was modified to include covers for the primary settling tanks 8/, aeration tanks and final settling tanks 9/ as well as installation of detection and monitoring facilities at the Clavey Road plant. The court, at that time, declined to require covering of the proposed stormwater retention basin 10/. By later agreement, the retention basin was modified to include a pre-sedimentation basin that would remove up to 80 percent of the solids received and would be covered. The retention basin would also have facilities to chlorinate any overflows and would contain recirculation equipment.

8/ Primary settling tanks remove suspended organic particles by gravity sedimentation.

9/ These two processes are referred to as the Activated Sludge process which reduces the organic content of sewage by forced aeration and gravity sedimentation.

10/ A retention basin is storage provided for excess flow above average flow during periods of wet weather. This excess flow, in the case of Clavey Road would result from the collection sewers in the communities which would route their wastes to the plant. The combined sewage consists of domestic wastes, urban storm runoff, and solids which have previously settled in the pipes or along gutters. These wastes will be retained in the basin until such time as they can be routed through the normal treatment processes. This practice gives high levels of treatment to storm runoff without increasing the size of the facility.

The five lakeside plants to be phased out are in typical residential areas. The North Chicago plant site and immediate environs have scattered residential development. This plant is immediately north of the restricted Great Lakes Naval Training Center. The Waukegan plant is built in an industrial area near the lakefront directly east of the Waukegan metropolitan area. The proposed new plant site at Gurnee is rural in nature and can be classified for use as open space. There are some minor forested tracts of land in the general area of the plant location. The condition around the Clavey Road facility exemplifies varying land use ranging from open-space forested areas to rather high intensity residential development. The environs near the Clavey Road facility will be the subject of later discussion.

THE TEXT OF THE ENVIRONMENTAL STATEMENT

INTRODUCTORY CONSIDERATIONS

The service area of the applicant's proposal is geographically located in proximity to the drainage divide between the Great Lakes and the Mississippi River Drainage Basins. In this broadest view, one must consider the implications of diversions of waters from one basin into the other.

I. THE GREAT LAKES SYSTEM

A. The Probable Impact of the Proposed Action on the Environment. General concurrence has been reached, as exemplified by the Lake Michigan Enforcement Conference, that the discharge of inadequately treated municipal and industrial wastes into the Great Lakes System should be eliminated.

In response to this requirement, municipalities along the south shore of Lake Michigan have elected to further protect Lake Michigan by diverting their effluents from the Great Lakes Drainage Basin into the Mississippi River Drainage Basin. The impact of these diversions is to decrease incrementally the natural flow through the Great Lakes System and to increase the flow in the Mississippi System. Lake Michigan cannot easily flush itself under existing conditions and in time a review should be made of the cummulative impact of the total diversions, present and projected, from the Great Lakes System into the Mississippi River Drainage Basin. 11/. Lakes receive nutrient contributions from the natural runoff. In addition, man's concentrations of pollution have in many cases resulted in the over-enrichment of lakes. Lake Michigan is currently receiving excess enrichment of human origin. The applicant's proposal will have the impact of diverting some of these concentrated pollutants from the Lake and will result in only minor decreases in natural nutrient contributions.

B. Any Probable Adverse Environmental Effects That Cannot Be Avoided. The question of diversion effects is one of the magnitude of the total impact. This in no way implies that the total diversions currently made

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11/ The Lake Michigan diversion allotment of 3,200 cubic feet per second (cfs) for the Illinois portion has already been established by Supreme Court ruling and we do not suggest here that a study be conducted at present, but suggest that a review be initiated at a later date to determine if any adverse environmental impacts have occurred.

The five lakeside plants to be phased out are in typical residential areas. The North Chicago plant site and immediate environs have scattered residential development. This plant is immediately north of the restricted Great Lakes Naval Training Center. The Waukegan plant is built in an industrial area near the lakefront directly east of the Waukegan metropolitan area. The proposed new plant site at Gurnee is rural in nature and can be classified for use as open space. There are some minor forested tracts of land in the general area of the plant location. The condition around the Clavey Road facility exemplifies varying land use ranging from open-space forested areas to rather high intensity residential development. The environs near the Clavey Road facility will be the subject of later discussion.

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from the Lake or proposed should not be assessed in greater detail at a later point in time. If, in the future, the magnitude of the total diversions is found to be detrimental to living systems in the Lake, then changes in the amounts of diversion may be necessary.

C. Alternatives To The Proposed Action. The obvious alternative is to provide the necessary nutrient removal and return the reclaimed water to the Lake. In this event, the water would have to meet the applicable standards set by the Lake Michigan Enforcement Conference or other regulatory requirements. However, the applicant and other municipalities have chosen to remove the effluents from the Lake 12/.

D. The Relationship Between Local Short-Term Uses of Man's Environment And The Maintenance and Enhancement Of Long-Term Productivity. The applicant's plan will immediately improve the quality of the shorewaters and thus will return the Lake shorewaters to full recreation use. The net effect of flow diversions with their attendant nutrient eliminations might, in the long-term, decrease the productivity of the Lake if the diversion alternative is pursued by many municipalities along the entire Lake Michigan shore.

E. Any Irreversible and Irretrievable Commitment of either natural or physical resources. The decision to divert the water is reversible. The proposed configuration of facilities could be utilized, with some modification, if it becomes necessary in the future to return the water to the Lake system.

12/ The applicant has further chosen to eliminate stormwater overflow from the southern sector of the project.

II. THE MISSISSIPPI RIVER SYSTEM -- HEADWATERS OF THE ILLINOIS RIVER

A river environment is much different from that of a lake system. It is, for the most part, less stable and is subject to great variations in stream flows. The instability creates an environment suitable to the productivity of numerous living things. Variation in stream flows thus is an important factor.

The course of action proposed by the applicant will result in changes in the characteristics of two tributary streams and in changes in the environment surrounding the proposed construction projects.

1. THE DES PLAINES RIVER BASIN. The Des Plaines Basin has a drainage area of approximately 300 square miles above the proposed points of effluent discharge. A U. S. Geological Survey gage located at Des Plaines, Illinois, indicates that the maximum stream flow has been 4,670 CFS and that there have been periods with no measurable flow during the period of record. The average discharge for 24 years of record at this gage is 203 CFS.

This river typically exhibits periods of extremely low flow in late summer, fall, and perhaps through the winter with periods of high flow in spring and early summer. The wide variability in water level and flow creates a special type habitat and its associated biota; nutrient levels may be critical.

A. The Probable Impact of the Proposed Action on the Environment. The applicant's proposal would divert the reclaimed water from the treatment processes in the District to the Des Plaines River. A total of 83 CFS would be discharged at three points in the Basin. The Waukegan plant would discharge 31 CFS (20MGD) of reclaimed water. The proposed Gurnee facility would discharge 26.5 CFS (17.25 MGD) of similar reclaimed water. The expanded Clavey Road facility would discharge 28 CFS (18 MGD) of tertiary effluent under the applicant's original proposal.

The results of discharge of these three effluents to the stream will be to increase the minimum flow to approximately 83 CFS. The character of the stream will change from a typically, seasonally dry stream bed to a more stable situation. The stream and its surrounding habitats will be changed and it is conceivable that a different biota13) will develop. The treatment processes selected to provide the high level of treatment may, in part, determine the stable biota that will develop.

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13) The plant and animal life of a region.

14) The possible receiving waters are Skokie River, Middle Fork or West Fork of the Chicago River, and the Des Plaines River.

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B. Any Probable Adverse Environmental Effects That Cannot Be Avoided. The diversion of highly treated effluents into this stream will result in an ecosystem less tolerant to pollution. The existing summer time biota is tolerant to drought. Elimination of drought conditions will result in an ecosystem which may be less tolerant to pollution. Therefore, bypassing or plant failures will have a greater impact on the clean water biota than it might have on the existing organisms. Another point is the introduction of increased quantities of pesticides, nutrients, and other types of contaminants which were not heretofore discharged through natural mechanisms to the Des Plaines River. However, such effects will probably be somewhat insignificant, given the expected concentrations of contaminants not affected by the treatment methods to be employed.

C. Alternatives To The Proposed Action. It is obvious from the preceding discussions concerning Lake Michigan that this stream could be permitted to remain in its natural state if the effluents were not diverted from the Great Lakes Basin. If the effluents are to be diverted from the Lake, then any one of a number of small Illinois River tributary streams14) could be utilized as a receiving water. All of these streams would be affected in the same manner.

D. Relationship Between Local Short-Term Uses and the Maintenance And Enhancement of Long-Term Productivity. The applicant's proposal represents a small diversion in flow which will greatly lessen the

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14) The possible receiving waters are Skokie River, Middle Fork or West Fork of the North Branch of the Chicago River and the Des Plaines River.

quantities of phosphorus, nitrogen, pesticides, and other contaminants entering Lake Michigan from North Shore Sanitary District facilities. This reduction will improve the water quality of Lake Michigan. To protect the Des Plaines River advanced waste treatment is proposed. The principal result will be low flow augmentation of this stream, which should enhance its long term productivity.

E. Irreversible And Irretrievable Commitments of Resources. It does not appear that any such commitments will occur for the reasons suggested previously.

2. THE SKOKIE RIVER BASIN. Skokie River has its headwaters within the NSSD and is a small intermittent stream. Its drainage area at the U. S. Geological Survey gage at Lake Forest, Illinois, is approximately 13 square miles. Maximum discharge at the gage was 321 CFS and periods of no flow have been observed. The average discharge for 13 years of record is 9.6 CFS. The existing Clavey Road facility discharges its effluent into the Skokie River at a point approximately 7 miles downstream from the Lake Forest gage and approximately 5 miles from the Skokie's confluence with the north branch of the Chicago River. This effluent might be characterized as an inadequately treated secondary effluent.15) Its flow rate presently averages 6 MGD (9.3 CFS).

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15) This plant is currently overloaded, resulting in poor performance of the individual processes.

The stream currently could be characterized as a small ditch. Below the plant outfall the stream is filled with bottom deposits rich in organic matter. The existing biota is extremely tolerant of pollution.

Approximately one-half mile downstream from the facility, the Skokie River flows along a botanical garden. This garden is a recreation and preservation area with small ponds and developed green areas immediately adjacent to the stream banks.

Still further downstream, the stream is impounded by a series of lagoons which are currently receptacles for large quantities of organic matter resulting in the formation of bottom deposits. These lagoons have been used for boating as well as other recreational activities, but their continued intensive use is being jeopardized by the degradation of the quality of water.

A. The Probable Impact Of The Proposed Action On The Environment. The applicant's proposal would increase the capacity of the Clavey Road treatment plant to 18 MGD and would have diverted this effluent by a force main to a discharge point located on the Des Plaines River.

By order of the IPCB, however, 18 MGD (28 CFS) will be released into the Skokie River at Clavey Road. Significant changes in the character of the river will result by increasing the quality and quantity of flow. Average low flows would increase from 6 MGD (9.3 CFS) to 18 MGD

(28 CFS). The discharge of a high quality effluent into the Skokie River will result in an enhancement of the water related esthetics in this area. The increased flow and the improved stream quality should result in an expanded habitat favorable to the existence of a wider variety of organisms. As in the case of the Des Plaines River, this discharge into the Skokie River would probably result in the development of a clean water biota within the watercourse. Similarly, this biota is more sensitive to facility failures or changes in the water quality of the stream.

B. Any Probable Adverse Environmental Effects That Cannot Be Avoided. As previously discussed, two options are available, namely -- total elimination of effluent from Skokie River or the discharge of sewage to the stream after receiving advanced waste treatment. These two options could result in two entirely different stream habitats and their associated biotas. The first option of total elimination would, over a period of time, return the stream to its natural state. The adverse effects would be a transition period from its current status to the status of a typical intermittent stream; the transition phase might cause esthetically unpleasant conditions along the watercourse which, while temporarily objectionable, would resolve themselves in the long-term.

Implementation of the second option could have probable adverse impacts through release of intermittent stormwater overflows. This would have detrimental effects on the clean water biota that would develop in the Skokie River. Similarly, the effects of plant failures would be detrimental to the clean water biota.

C. Alternatives To The Proposed Action. Since the impact of discharging effluent, after sufficient treatment, to the Skokie River would be to appreciably enhance the stream above its present condition, this is considered to be a preferable alternative to the diversion of the Clavey Road plant effluent to the Des Plaines River. While enhancement would also occur in the Des Plaines River, the net beneficial effect is seen to be greater with discharge to the Skokie River.

Conversely, the elimination of this effluent from the Skokie River would, in time if no other contaminants were present, return the stream to a near natural condition which could result in the re-establishment of the natural biota typically present in the area. This biota, acclimated to periods of no flow, can sustain itself under the wide range of conditions that would normally exist. Such a biota is, of course, an integral part of natural ecosystem.

If the Skokie River receives the effluent, the biota which develops could still be adversely effected by the stormwater overflows. Infrequent shock loadings to the stream and the lagoons downstream could occur from the organic content of such overflows. An alternative to this proposal is to permit the stormwater overflows after pre-treatment and chlorination to be discharged to the lake. However, the retention and treatment of stormwater overflow at the Claver Road site as proposed by the applicant is considered preferable because it will reduce the nutrient loads entering Lake Michigan.

D. The Relationship Between Local Short-Term Uses of Man's Environment and The Maintenance And Enhancement Of Long-Term Productivity. In the southern sector, the applicant is providing for short-term purposes, protection not previously afforded to either the lake or stream ecosystems. In all likelihood, the long-term productivity of the stream ecosystem will be increased by the addition of additional flows to the Skokie River. While minor detriment may occur from shock loadings, the total effect will be to increase the productivity and the diversity of organisms within this stream.

E. Any Irreversible And Irretrievable Commitments of Resources. The proposed actions or their alternatives do not appear to be irreversible. The effluent discharge point selection, while resulting in a development of clean water biota in both instances, can be relocated if, in the long-term, conditions indicate this to be necessary.

III. LAND USE CONSIDERATIONS

During the process of environmental impact evaluation, examples of previous, unnecessary mistakes in land and water use often are all too obvious. Since the immediate and long-range goals of evaluating environmental impacts are to eliminate or to lessen deterioration of the environment, attention must be given to land use planning. The scope of this planning has several related parts. First of all, the basic need is to insure the proper maintenance of life-sustaining systems on this earth. This basic requirement must be viewed in both its time and its space dimensions. Previous sections of this evaluation have reviewed some considerations pertinent to the larger natural systems that are presently or will be impacted to some degree by the applicant's proposed project - the Great Lakes and Mississippi River drainage systems. In this section the concern is for the local aspects of the impacts of the construction and operation of a District sewerage system.

In terms of land use optimization, local development of sewerage systems must be concerned with minimizing destruction of natural resources and/or despoiling of the environment through adequate planning and in the construction and operation phases of the project. This includes rebuilding of areas unavoidably damaged. Local planning also must be concerned with setting aside adequate areas to provide buffer areas to potentially undesirable sites, such as sewage treatment plants.

Included in this planning are the values of the placement of vegetation buffers and the significance of vegetation in ameliorating day-by-day conditions and, especially, unavoidable mishaps. Considerations of macro- and micro- meteorological aspects should be incorporated into the selection of the facility site, in construction of facilities, and in the arrangement and density of the vegetation buffer between the outlying industrial and/or residential areas.

Environmental protection demands special considerations during the construction phase of sewerage facilities. These are considered in some detail in the following discussion.

Facilities Location and Construction

The applicant's proposal will result in major environmental changes at nine treatment plant locations and attendant interceptor routes. In addition, a new facility will be constructed that will also change the environment in its area.

A. The Probable Impact of The Proposed Action On the Environment

1) Waukegan. The expansion of the existing plant should have little impact on the area surrounding the site. The environment surrounding the facility already has adapted to its presence. Expansion and upgrading should do little to effect this environment. The local environment in the immediate area, especially the beaches, will be affected by the storm water overflows. As previously noted, these overflows will occur infrequently.

The Waukegan sewage treatment plant will be the site for a large scale sludge drying and incineration operation 16/. The units of this process involve a sludge blending tank, two 45-foot diameter sludge storage tanks, two elutriation tanks, four 10-foot diameter vacuum filters, two 22-foot diameter multiple hearth sludge incinerators, two ash lagoons and all related appurtenances. The units have been designed to handle 29,840 pounds of solids per day. The sources that will contribute sludge are the Clavey Road, North Chicago and Waukegan treatment plants. Each furnace will have an exhaust gas scrubber system that will receive all gases of combustion and discharge stack gases to the atmosphere containing not more than 0.2 grain of particulate matter per standard cubic foot of exhaust gas. The Illinois Environmental Protection Agency issued a permit on October 27, 1970, for the installation and operation of the above facilities. It is believed there will be no adverse impact from sludge disposal operation at the Waukegan plant.

As a supplement to the Waukegan sludge disposal method, there is some effort being directed toward obtaining a land site for ultimate disposal of sludge, but the environmental consequences, if any, of the action cannot be measured at present. The construction of new interceptors in the service area will undoubtedly disrupt the normal human life patterns along their routes. The effect on the other life systems on the routes are minimal as these are paved urban streets.

16/ These are processes used to reduce the sewage sludges to ash by burning the sludge in a furnace.

2) North Chicago. The expansion to the existing facility and elimination of overloaded facilities should be a positive impact on the environment. The altered plant will provide only pre-treatment before pumping of the sewage to the new Gurnee plant. Odor problems in the area should be greatly reduced resulting in improvement of the esthetics in the surrounding area. The arguments presented above concerning stormwater overflows are also applicable to the North Chicago plant. Interceptor construction will also disrupt the local human life patterns.

3) Clavey Road. The present plant is located on a 20 acre site and under the applicant's proposal the expanded facility will occupy approximately 35 acres. The applicant now owns a total of 45 acres at Clavey Road. The plant currently is surrounded by a mixed environment consisting of private residences, churches, and recreational areas. The physical presence of this enlarged facility will be more apparent. The inclusion of a large retention basin adds further to this situation.

With expansion of the facility there should be a substantive reduction in the existing odor problem. The current facility is overloaded and may have been poorly operated in the past. 17/ The local residents have been subjected to objectionable odors and have resisted the plant's expansion. (See Footnote 7.) In the course of litigation the possibility of airborne transmission of disease also has been advanced as another impact.

17/ Either situation results in excessive odors.

Another impact, which will result from the conversion of the five lakefront plants to pumping stations, is creation of open-space in five residential areas. The elimination of inadequate treatment at these sites should eliminate odor problems as well as create open-space. The elimination of stormwater overflows at these plants will also enhance the lakefront in that vicinity and contribute to an overall environment enhancement of this area.

The construction of the major Middle Fork interceptor will not disrupt the human life systems to any degree, largely due to the selection of an interceptor route paralleling an existing interstate highway. The ecosystem along the route will be temporarily disturbed during the construction process. Human inconvenience will probably be experienced during the construction of the southerly lakeside interceptor. The disruption will be more severe than that related to the Middle Fork interceptor. The construction of the force main from the Clavey Road plant to the Des Plaines River would also result in temporary inconvenience. The route is through an area of intermittent residential development and open space.

4) Gurnee. The new facility will have local impact on its rural environment because of environmental changes associated with intensive development of the plant. The site purchased by the District is contiguous to land presently utilized for agricultural purposes; a portion of the area is also open space with no development. The inter-

ceptor system will, of course, cause minor disruption of the area during construction.

B. Adverse Impacts Which Cannot Be Avoided

1) Waukegan. The possibility for occasional discharge of inadequately treated stormwater overflows should be regarded as detrimental to Lake Michigan and especially the local beach environment. The applicant has proposed pre-treatment and chlorination but it may be necessary to provide additional retention capacity.

The disruption caused by sewer construction is unavoidable if the area is to adequately treat its waste.

2) North Chicago. Stormwater overflows will be detained in existing facilities until they are pumped to Gurnee, where they will receive treatment before discharge to the Des Plaines River. This will result in a minor adverse effect on the Des Plaines River but the applicant has provided for a high level of treatment which should minimize the overall adverse impact.

Minor disruptions during sewer construction are unavoidable.

3) Clavey Road. The expansion of the plant and construction of the retention basin would have an adverse impact from physical presence, possible odors, and potential airborne infection. The proposed 18 MGD facility will not add to the esthetic quality of the neighborhood, which is a mixed residential and recreation area. Odor problems will largely result from the open retention basin. Airborne infections from such basins have not been acknowledged by all, but the possibility for harmful emissions is known to exist.

The effluent lagoon will receive secondary effluent and serve as a polishing pond producing a final effluent quality under design conditions in the range of 92% removal of five day BOD and SS.

The lagoon at Clavey Road was originally designed to provide tertiary treatment before pumping to the Des Plaines River. Upon completion of AWT and with the use of the Skokie River as a receiving water the lagoon will no longer be needed. During the interim construction period, the lagoon will be utilized in the treatment process.

Occasional mild odor emissions may occur from this lagoon during wet periods when the plant cannot maintain normal levels of treatment efficiency. This is not considered a major adverse impact of the long term Clavey Road project, as the utility of the lagoon will cease upon completion of more sophisticated and desirable AWT processes.

The environmental setting for the Clavey Road facility has changed since its original construction. Regardless of the actions which created this change, it has occurred. The plant is now in an unfavorable setting but the practicality of the situation mitigates against its discontinuation because the phasing out of the five lakeside plants must occur before the July 1972, enforcement deadline. These wastes must be treated and Clavey Road provides the only possible site for such treatment. 18/

The case for phasing out the lakeside plants is convincing. Among the problems with maintaining a lakeside location is the

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18/ The alternative means of providing this treatment will be explored in detail later in the section on Alternatives to the Proposed Action.

unavailability of needed land to expand the existing lakeside facilities or to acquire a large single lakeshore location. There is no environmental justification for their continued operation and the decision to discontinue these plants is not questioned here.

Projections of sewage flows have been made by the consulting engineer for the District and this office. A tributary flow to the Clavey Road plant of about 18 MGD will occur in 1980, assuming that the major interceptor and sewers are built as now proposed. A relief plant will need to be constructed and on line prior to that time so that additional flows can be given adequate treatment. In the immediate future at Clavey Road, treatment capacity of approximately 12 MGD is required. Presently the Clavey Road facility is receiving average daily flows of about 6 million gallons. When the lakeside plants are phased out, it is anticipated that the levels of stormwater infiltration into the sewers may be somewhat reduced. The result would mean a minimum tributary flow to the Clavey Road plant from the three Highland Park lakeside plants of nearly 2.7 MGD. The Lake Bluff plant would contribute 0.6 MGD and the Lake Forest plant would add another 2 MGD. In total, the sewage flow to the Clavey Road facility would be approximately 11.3 MGD. The maximum flow is dependent on future development and infiltration control.

The Clavey Road operation has in the past caused odor problems and has inadequately treated its discharges. The project now proposed by the District will improve these conditions. Control measures including covering of the presedimentation basin, primary, aeration and final tanks as well as a sophisticated multiple deodorization system and forced ventilation will effectively minimize the potential for odors emanating from the plant.

Further steps are necessary to insure that the operation and expansion will minimize adverse impacts. The Water Program Office is concerned with the efficiency of operation and maintenance of the facility once expanded. Wherever human or mechanical error is a probability, the best design for a treatment system is one that minimizes to the highest possible degree the potential for human or mechanical misdoing. While the proposed plant will have other standby units available, a malfunction of mechanical equipment related to operation of the retention basin or presedimentation basin followed by untimely corrective measures would in theory produce a very unpleasant situation.

The open retention basin without complete covering continue to be an extremely controversial problem from the public health viewpoint. The results of extensive testimony by experts in the fields of aquatic-microbiology, virology, and waterborne diseases indicates differences of opinion as to the occurences of harmful organisms. During lengthy hearings in Waukegan conducted by the Illinois Pollution Control Board in mid-November and early December, 1970, no conclusive evidence was given by these experts as to the presence or absence of emissions of bacteria or viruses from open sewage treatment units. Dr. Deinhardt, head of the Department of Microbiology of the University of Illinois

Medical School, testified that in his opinion no danger presently exists. Dr. Bertram Carnow, Chief of the Section of Environmental Health, University of Illinois, indicated in the Waukegan hearings that adequate studies have not been performed and that conclusive evidence to substantiate either position had not yet been produced. The former Director of the Illinois Environmental Protection Agency, Mr. Clarence Klassen, revealed that he was unaware of any serious illnesses to sewage treatment plant operators in the State caused by or attributed to their day-to-day activities in treating sewage.

This office has studied the literature in this field and incongruous results have been found regarding the probability for transmittal of airborne viruses and bacteria.

Appendix B contains pertinent articles that discuss health effects owing to emissions from sewage treatment plants. More notably, Ledbetter and Randall found that..."Large numbers of potentially pathogenic bacteria were collected from the air surrounding activated sludge units, and many persisted for a considerable time and distance. Significantly, the airborne enteric pathogens were greatly outnumbered by bacteria of proved pathogenicity in the respiratory tract." Included in Appendix B are two articles prepared as rebuttal statements to the District's Environmental Assessment regarding health effects from sewage treatment plants. In these statements, Dr. Martin Rogoff, Manager, Microbiology, International Minerals and Chemical Corporation, Libertyville, Illinois, said that..."The argument that epidemiological relationships have not been proven is not valid. The work has simply not yet been done." Dr. Carnow, in the second article, concluded that..."In regard to projected increase in the size of the sewage plant and its impact on the community, there will be present an increase in materials which will reduce the resistance of the lungs to disease and cause considerable irritation to the respiratory tract of many people in the surrounding community." However, Dr. Carnow did not context his statement in relation to closed treatment units.

It is the belief of the Regional Water Program Office that no conclusive evidence has been advanced to eliminate concern for potential adverse health effects attributable to odors or pathogens resulting from full expansion of the Clavey Road plant.

We do not feel that the project as now proposed satisfies fully the letter, spirit or intent of Section 101-b (2) of the National Environmental Policy Act of 1969, namely, that the project will assure for the residents in the immediate area of the plant..."safe, healthful, productive, and esthetically and culturally pleasing surroundings." It may be that further study will prove that no health hazard exists, but the proximity of the plant to the Clavey homes dictates maximum protection at this time.

Complete covering of the entire retention basin offers the best way to effectively minimize any adverse effects resulting from potential mechanical or human error. Apart from health aspects, deodorization facilities and emission controls as those proposed by the District are deemed sufficient to meet the applicable Air Quality Standards at the Clavey Road plant.

4) Gurnee. The adverse impact of the new facility can be minimized by proper concern for the buffer areas around the plant. The incorporation of the concepts presented in the Land Use Considerations should prevent a recurrance of the problems encountered at Clavey Road. Landscaping to de-emphasize the plant is recommended. Consideration should also be given to the placement of vegetation to change or otherwise channel air currents.

B. Alternatives To The Proposed Action.

1) Waukegan. The alternative is to eliminate any opportunity for stormwater overflows. The applicant is advised to provide adequate storage to eliminate the overflows.

2) North Chicago. The alternative is to provide retention basins for the overflows at the Gurnee site. This should be implemented if sufficient storage cannot be provided at the North Chicago facility.

3) Clavey Road. The Clavey Road facility, although designed for 4.5 MGD, is now treating average flows of 6 MGD. The proposed plant will also receive wastes from the five lakeside plants that will be phased out by mid-1972. As a result, the flow to Clavey Road will be increased

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to about 11.3 MGD upon completion of the plant. Since no facility other than the Clavey Road plant will be available to accomodate the projected phase out, Clavey must be designed to treat a minimum sewage flow on this order. A series of alternatives have been evaluated by the Regional Office involving three different treatment plant locations based on meeting the sewage treatment needs through 1990. Plant locations considered are the Clavey Road site at the present location, Des Plaines River site at the Lake-Cook County Line, and the industrially zoned area of Rondout immediately west of Lake Bluff. In selecting these three possible plant locations for comparison, consideration was given to other sites, but none were believed feasible. 19/

Detailed cost estimates associated with the cost of development of treatment plants and appurtenant facilities at each of the three sites considered are contained in Table 1. These estimates are based on the assumptions that; 1) all flows would receive treatment to the extent of primary, secondary activated sludge and activated carbon absorption for dissolved organic removal, waste pickle liquor for phosphorus removal, nitrification-denitrification for ammonia removal and chlorination of the effluent; 2) alternatives would be sized for the anticipated 1990 sewage flow of 30 MGD; 3) all sites would have provisions for a retention

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19/ The evaluation of the alternatives involving the Clavey Road Treatment plant was prepared in February, 1971, and later refined. Subsequently the results were discussed with the parties concerned in attempts to achieve resolution of the Clavey Road situation. Several meetings were held with the NSSD and a local citizen group in an attempt to reach a decision on an environmentally and socially acceptable solution.

TABLE 1

CAPITAL CONSTRUCTION COSTS - NSSD PROJECT
DESIGN YEAR - 1990

	Item	Options							
		12 MGC Clavey Rd. A	18 MGD Clavey Rd. B	18 MGD Rondout C	12 MGD Rondout D	30 MGD Rondout E	18 MGD Des Plaines F	12 MGD Des Plaines G	30 MGD Des Plaines H
1.	STP Additions (incl Cl_2)	$ 3,305,000	$ 5,270,000	$ 6,674,000	$ 5,005,000	$ 9,985,000	$ 6,674,000	$ 5,005,000	$ 9,985,000
2.	Advanced Waste Treatment	4,687,000	6,491,000	6,491,000	4,687,000	9,737,000	6,491,000	4,687,000	9,737,000
3.	Detention Basins	800,000	1,350,000	1,350,000	800,000	1,624,000	1,350,000	800,000	1,624,000
4.	Coverings and Modifications*	3,508,000	5,236,000	5,236,000	3,508,000	8,744,000	5,236,000	3,508,000	8,744,000
5.	Eff. Pumping Sta. & FM	0	0	3,354,000	2,777,000	4,451,000	0	0	0
6.	Sewage Pumping Sta. & FM	0	0	2,824,000	0	4,654,000	6,339,000	5,965,000	7,703,000
7.	Southwest Pumping Sta. & FM	0	0	5,286,000	4,448,000	6,140,000	0	0	0
8.	Lake Forest Pumping Sta. & FM	0	0	2,090,000	2,090,000	2,090,000	0	0	0
9.	Sludge Disposal	1,266,000	1,897,000	2,064,000	1,376,000	3,440,000	2,065,000	1,376,000	3,440,000
10.	Land		200,000	375,000	325,000	480,000	375,000	325,000	480,000
11.	Middle Fork Interceptor	0	0	5,243,000	8,889,000	5,243,000	11,324,000	11,324,000	11,324,000
12.	Clavey Road Phase Out	0	0	0	0	4,000,000	0	0	4,000,000
		$13,566,000	$20,444,000	$40,987,000	$33,905,000	$60.488.000	$39,854,000	$32,990,000	$57,037,000

Alternatives		Total Costs	Million Gallons Per Year Treated	Cost Per MG	Difference in Total Cost
1.	A&C	$54,553,000	10,950	$4,991	1. $ 1,133,000
2.	B&D	54,349,000	10,950	4,963	2. 929,000
3.	E	60,488,000	10,950	5,798	3. 7,168,000
4.	A&F	53,420,000	10,950	4,879	4. Base
5.	B&G	53,434,000	10,950	4,880	5. 14,000
6.	H	57,037,000	10,950	5,474	6. 3,617,000

*Includes costs for deodorization.

basin; 4) all facilities would be covered, and 5) all estimates are based on March, 1971, price levels. The costs for retention basin covering do not reflect new design, but do indicate measures over and above the scope of the applicant's present project. Deodorization equipment is also included.

Table 1 shows that interim expansion would cost $4.0 million even with a phase out of that facility. This interim expansion to 12 MGD capacity at Clavey Road would be required since a major plant at a second site could not be on line until possibly 1975. It would consist of the existing primary treatment facilities, the conversion of the lagoon under construction into an aerated lagoon, and the chlorination units which are also under construction. Activated carbon units would be needed to provide the high degree of removal of organic pollutants.

A comparison of capital costs of alternative facilities shows that the costs involving the Clavey Road and Des Plaines sites are within $4.0 million of each other which shows a cost differential of seven percent. Alternatives involving the 12 MGD and the 18 MGD capacity plant at the Clavey Road site would have essentially the same capital cost although the bigger capacity plant would defer the need for a second plant at Des Plaines for about five years. Table 1 also shows that development at the Rondout site (options D & E) would cost about $1 million to $3 1/2 million more than comparable development at the Des

Plaines site (option G & H) depending on the size of the facility. The annual costs for operation and maintenance would be essentially the same at both the Rondout and Des Plaines sites as shown in detailed estimates contained in Appendix E. Because of the economic disadvantage at the Rondout site with no apparent offsetting environmental or social effects, no further consideration will be given in this report to development at the Rondout site.

The review of capital cost in Table 1 thus reveals a feasible alternative to the applicant's, namely, alternative number 4; Clavey Road plant with reduced capacity to 12 MGD, tertiary treatment and nutrient removal, complete covering and deodorization and a 10 MG retention basin. This is utilized in combination with a 18 MGD plant of similar design and a 20 MG retention basin at the Des Plaines site.

This alternative involves the addition of 7.5 MGD capacity to the existing primary, secondary, and disinfection facilities at the Clavey Road plant. The retention basins at both sites would be covered to avoid the possibility of airborne infection. The costs shown for the two sites indicate that savings in relation to capacity would occur with the larger retention basins at the Des Plaines plant.

Annual costs for operation and maintenance have been computed for three points in time--1980, 1985, 1990. A summary of these costs for each of the principal plans are contained in Table 2.

TABLE 2

COMPARISON OF ESTIMATED OPERATION AND MAINTENANCE COSTS FOR PRINCIPAL ALTERNATIVES

Options (See Table 1)		Annual Costs
A&F	1973-1974,	$ 906,000
	1975-1979,	1,475,000
	1980-1990,	2,172,000
B&G	1973-1979,	1,241,000
	1980-1990,	2,164,000
H	1973-1974,	2,000,000
	1975-1979,	1,226,000
	1980-1990,	2,140,000

Table 2 reflects the difference in the costs for operation and maintenance during the 1970's. These estimates note the short-term, higher costs of operation and maintenance associated with the temporary facility at the Clavey Road site for option H in comparison with the costs of a permanent facility at Clavey Road in the other two alternatives. Alternative B&G would include lower operation and maintenance costs throughout the 1970's because the second plant at the Des Plaines site would not have to be in operation until the end of 1980. Beyond 1980, the unit costs for operation and maintenance for each of the three alternatives would be essentially the same.

Table 3 presents a summary of the total economic costs (capital investments, operation and maintenance costs) for each of the plant costs. It reflects the time-value of a flow of investments based on a 6 percent annual interest rate. Detailed evaluations of the anticipated operation and maintenance costs have been discounted to 1971

TABLE 3

ECONOMIC COMPARISON OF PRINCIPAL ALTERNATIVES
(1971 to 1990 Evaluation Period)

Options (See Table 1)	Initial Use of Des Plaines Plant	Present Worth as of 1971		
		Capital Investments	Annual O&M Costs	Total
A & F	1975	$46,439,000	$15,846,000	$62,285,000
B & G	1980	$41,229,000	$15,592,000	$56,821,000
H	1975	$48,530,000	$16,675,000	$65,205,000

NOTE: The above analysis is based on a 6 percent annual interest rate. Thus, future investments have been discounted to 1971 recognizing this time value of money.

for comparative purposes. A comparison of the present worths of the total costs of the three principal alternatives shows that Option B&G, the Clavey Road plant with a capacity of 18 MGD and the Des Plaines plant with a capacity of 12 MGD, would be the most economical solution. Alternative B&G appears more attractive in that the time-value of deferring the Des Plaines plant is recognized until 1980. A&F and H would be only about 9.5 and 14.7 percent greater than the most economical alternative.

For the Clavey Road facility, the adverse impacts can be avoided partially in the future. Selection of Option H would eliminate the Clavey Road Plant after 1975. This alternative would entail an additional cost, in terms of the total economic costs shown in Table 3, of $8.9 million. This selection would further necessitate the temporary construction of additional facilities at the present site. Such facilities could well add to the environmental problems during their use in the next four years. The presence of an aerated lagoon amplifies the question of airborne infection and could well increase the odor problem. The cost of covering the aerated lagoon was not considered because the lagoon cannot function properly if covered. From the above considerations it is apparent that the Clavey Road facility must remain in operation. The cost of discontinuance is prohibitive and the environmental consequences during the phase out are unavoidable.

The question can then be reduced to the assignment of capacity to the Clavey Road plant. The minimum capacity of 12 MGD was determined by the decision to close the lakeside plants. The maximum was determined by the agreement between the City of Highland Park and NSSD which set the maximum capacity of 18 MGD. The latter capacity is the more economical of the two based on the values presented in Table 3.

An economic penalty of approximately $5.5 million will be incurred if the 12 MGD capacity were chosen.

The environmental impact of the plant's location could be minimized to an extent if the project were to be built at the 12 MGD capacity. It is estimated that an additional 3 to 4 acres of occupied space are necessary for construction of the larger 18 MGD facility. A continuing stipulation is the covering of the retention basin in response to the possible public health effects. The size of the retention basin should be consistent with earlier design parameters. Further, the applicant must provide for competent operation and maintenance and shall take measures to blend the new facility into its surrounding. In particular, the possibility of constructing forest windbreaks and air channels for odor control should be studied.

The discharges from the Clavey Road plant have contributed in part to degradation of the Skokie River and have had an adverse effect on the

Skokie Lagoons downstream. The lagoons have experienced substantial utility for recreation purposes, but the beneficial uses of this resource have been endangered due to water pollution. There is considerable merit for providing advanced waste treatment at the Clavey Road sewage treatment plant because of the water quality enhancement to be obtained through low-flow augmentation.

The possible adverse impact of Lake Michigan diversions has been previously discussed and this project's contribution is regarded as minimal.

The above capacity recommendation will necessitate development of the Des Plaines River site in the near future. Care should be taken in site selection to minimize the environmental impacts.

4) Gurnee. The proper care in site development, subsequent construction and landscaping should be taken in order to minimize the impact of the plant. The environs surrounding the plant should be preserved to the extent possible. Care, if taken during initial phases of construction and early operations, could alleviate many of the environmental shortcomings.

IV. PUBLIC OBJECTIONS TO PROJECT AND RESOLUTIONS

A. Applicant's Original Proposal As Contained In Grant Application. The preceeding text of this Environmental Impact Statement references the major objections put forth by concerned parties. Emphasis centered on the Clavey Road sewage treatment plant and its proposed expansion and improvement program. Specifically the following objections have been voiced regarding the Clavey Road project:

1. The area is no longer suitable for a sewage treatment plant, let alone for substantial expansion of existing facilities.

2. Adequate precautions have not been incorporated into the new facilities to eliminate concern over air pollution, odors, and air borne transmission of viruses and bacteria.

3. Inundation of bottom lands will occur during periods of wet weather in areas adjacent to the facility once it is expanded.

Attempts to resolve the major differences took the form of numerous public meetings, hearings and separate pieces of litigation at various levels of judicial review. Attempts by local residents near the Clavey Road plant were unsuccessful for the most part in achieving a redirection of NSSD priorities as to location of treatment facilities in the Southern portion of the District. Of significance was the fact that an ultimate capacity limit of 18 MGD was placed on the Clavey Road installation, through agreement with the City of Highland Park and the NSSD. There were substantive modifications relating to item two of the above. As identified in the text, the basic treatment units will be covered, a highly refined deodorization and air ventilation system has been included and the land surrounding the plant will be landscaped to blend environmental features. There has been no satisfactory resolution of item three as the topographic characteristics of the entire area, i.e., flood plain, portray a naturally occuring condition which should not be materially altered as a result of operations at the Clavey Road location.

B. Draft Impact Statement. All comments that have been received by this office are contained in Appendix A. They exemplify a broad spectrum of viewpoints and generally reflect mixed reaction to recommendations contained in the Water Program Office draft statement. The major items of concern have been categorized generally and are listed below:

1. Implementation of the Water Program Office recommendation for restricted expansion of the Clavey Road plant would delay completion of the project up to six years. Also, the discharge of inadequately treated sewage into Lake Michigan from the District's lakeside plants would be continued for a considerable time, thereby jeopardizing the quality of the shorewaters.

2. The retention basin at Clavey Road did not warrant complete covering at this time.

3. An additional expenditure in the range 30 million to build a new treatment plant on the Des Plaines River is economically unsound and unnecessary.

This office addressed itself to these objections as well as to other minor comments and still favors the basic rationale inherent in the draft statement. That is to say, where possible, it is an environmentally more acceptable solution to consolidate waste treatment facilities into as few locations as possible. If this arrangement is unlikely, then every precaution must be taken to lessen the adverse environmental impacts attributable to the particular project.

The basic tenet by which this office became concerned over the total environmental impact of the NSSD project was through the National Environmental Policy Act. Clearly, this Act puts forth the requirement that Federal Agencies whose actions may directly or indirectly affect the environment must consider among other things, the fundamental concepts of public health, esthetics, and land management. This has been done, both by the IPCP and Water Program Office of EPA, in this instance. Our preliminary findings were not those of the IPCB, nor should they be expected to reflect identical opinions, given the varying yardsticks by which the NSSD project was measured.

Our interests here are common with those of the District and all the people of Lake County, that is to expeditiously achieve the highest levels of water quality with the least amount of environmental degradation in the process.

There is in this matter, however, a question of rather deep importance that heretofore was not satisfactorily aired. Is there a significant difference as to the adverse environmental impact between a 12 MGD facility and an 18 MGD plant, given the unique features and conditions on the Clavey Road facility as they now stand? Each of the objections as they relate to this question are addressed below.

On the matter of timeliness in phasing out the five Lakeside plants for discharge to inland watersheds, this office refutes claims that delays would be incurred resulting from a 12 MGD capacity limit at Clavey Road. The question is one of time required to purchase a site and construct a plant on the Des Plaines River so as to minimize potential hydraulic overloading at Clavey Road. Substantial delays could arise due to the District's lack of "quick take" eminent domain power and the lack of flexible statutory provisions allowing construction outside present District boundaries. As noted in the text, 12 MGD is the estimated flow to Clavey Road upon phase out of the 5 smaller lakeside plants. Additional flows would depend on intensity of future development and the status of the Illinois Pollution Control Board imposed sewer ban on the District. An interim solution could involve the use of chemical coagulants and/or polyelectrolytes. The Des Plaines River plant would not effect the timing of immediate phaseout of the lakeside plants, but could result in undesirable side effects at Clavey Road should its construction be impaired.

In regard to objection number two the text of this statement discusses fully the pertinent factors. In essence, the precipitant factor leading to the Water Program Office position on complete covering of the retention basin (given the unique requirements of this particular project), was our evaluation of an obligation under the Natural Environmental Policy Act of 1969. The public health considerations cannot be dismissed in this case. Complete covering is necessary to insure that maximum safeguards are provided to protect the immediate population from possible odors and airborne infection.

Objection number three stems from a lack of understanding by many people as to the areawide sewerage needs of the District. To those so inclined, it is submitted that what was proposed by this office is a master wastewater management plan for this area to the year 1990. Unlike the NSSD proposal which would only be adequate to serve sewerage needs in the Southern portion of the District to 1980, it becomes obvious that additional expenditures are, in fact, required. The Water Program Office data quite realistically estimates what the needed additional treatment will cost. In the last analysis, the longer the NSSD waits to develop a Des Plaines River site, the higher the costs will rise and in all probability, the more difficult it will be to secure the necessary land.

The determination of relative impact on the environment yields the conclusion that there is no significant difference when considering a 12 MGD plant versus an 18 MGD operation, given the highest level of environmental controls and safeguards herein identified for the Davey Road plant.

RECOMMENDATIONS

Based on the review and discussions contained in the preceding text, the Water Program Office recommends:

1. The North Shore Sanitary District proceed with the total sewerage project as originally proposed and outlined on pages 1 and 2 of this document, but with the following additions:

    a. To meet environmental considerations, additional stormwater retention and/or treatment be provided as necessary at Waukegan and North Chicago.

    b. The Clavey Road treatment plant provide the necessary advanced waste treatment unit processes for direct discharge to the Skokie River and the retention basin be covered to protect the local residents from objectionable odors and potential airborne infections.

2. The effluent lagoon nearing completion at Clavey Road be operated and maintained only until such time as newly required advanced waste treatment units become operational.

3. The North Shore Sanitary District is advised to purchase a site for a treatment facility on the Des Plaines River near the Lake-Cook County line and to find the means necessary to do so. The site should be developed in the near future for a treatment facility of appropriate capacity.

4. The North Shore Sanitary District is advised to limit environmental damage during construction and to restore disrupted areas to their former condition.

5. The North Shore Sanitary District is advised to landscape their facilities in a manner which will minimize the environmental impact of the facilities on neighboring areas. Buffer zones of vegetation should be created in the immediate proximity to treatment facilities.

6. The Water Program Office of the U. S. Environmental Protection Agency is advised to initiate a study under controlled conditions to ascertain the possibility of airborne infection from sewage treatment facilities.

APPENDIX A

COMMENTS RECEIVED ON DRAFT ENVIRONMENTAL IMPACT STATEMENT

ALLEN J. ELLENDER, LA., CHAIRMAN

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THOMAS J. SCOTT, CHIEF CLERK
WM. W. WOODRUFF, COUNSEL

United States Senate
COMMITTEE ON APPROPRIATIONS
WASHINGTON, D.C. 20510

July 8, 1971

The Honorable William D. Ruckelshaus
Administrator, Environmental Protection Agency
1626 K Street, N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus:

When the Region V Water Quality Office of the Environmental Protection Agency submitted its draft environmental impact statement on April 23, 1971, relative to the proposed expansion of sewage treatment facilities in the North Shore Sanitary District, we, who represent the citizens of Illinois directly concerned in this matter, took exception to portions of that statement. The basis for our dissent has not changed but has, indeed, been heightened by the fact that each day's delay in solving this problem results in a continued deterioration of the condition of Lake Michigan.

Inasmuch as we have already made known our views on the urgency of this situation, it should not be necessary to now go into great detail. Nevertheless, it may be helpful to you in passing upon the regional assessment to have before you our combined statement in which we strongly urge the following:

1) That you totally reject those portions of the regional assessment which would limit the Clavey Road plant to a capacity of 12 MGD;

2) That the March 31st order of the Illinois Pollution Control Board relating to the proposed construction of an 18 MGD plant at Clavey Road be supported by the Environmental Protection Agency -- an action which would be in harmony with the Congressional intent that state programs to abate pollution of interstate or navigable waters shall be encouraged and that solutions to environmental problems be arrived at in a spirit of cooperation between federal and state agencies (33 U.S.C.A. §1160 (b) and 42 U.S.C.A. §4331);

3) That the severe economic hardship occasioned by the delay in construction be carefully considered in determining a date for the release of federal funds previously authorized for this project;

4) That the 200,000 residents of the North Shore Sanitary District, who would be most directly affected by the continued pollution of Lake Michigan, be given the greatest consideration in the formulation of your final decision.

In bringing these matters to your personal attention, we are keenly aware that a relatively small number of our constituents firmly hold to a different view. We fully expect that their interests will not be ignored nor jeopardized by the development of the Clavey Road plant or other parts of the NSSD project as designed, and as approved by the Illinois Pollution Control Board.

In conclusion, we are aware that you are being called upon to resolve difficult questions which have been presented in this instance, and we wish to assure you of our cooperation to the end that the sewage collection and treatment needs of the area may be served, and that Lake Michigan may be preserved for the use and enjoyment of this and future generations.

Sincerely,

Charles Percy

Charles H. Percy/vm
United States Senator

Adlai Stevenson

Adlai E. Stevenson, III
United States Senator

Robert McClory.

Robert McClory
United States Representative

ROBERT McCLORY
12TH DISTRICT, ILLINOIS

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House of Representatives
Washington, D.C. 20515

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May 7, 1971

Mr. Francis T. Mayo
Regional Coordinator
Environmental Protection Agency
33 East Congress Parkway
Chicago, Illinois 60605

Dear Mr. Mayo:

On behalf of over 200,000 residents in the North Shore Sanitary District whose ecological and economic wellbeing depends upon the immediate expansion of sewage treatment facilities -- and in the paramount interest of preventing the spoilage of Lake Michigan -- I take serious exception to the draft environmental assessment prepared by the Region 5 Water Quality Office of the Environmental Protection Agency.

In communicating my views on the proposed plan for sewage disposal by the North Shore Sanitary District, I wish to comment very directly and succinctly as follows:

> 1) The prime objective of eliminating inadequately treated sewage from Lake Michigan (including some untreated sewage effluents) would be substantially thwarted by the alternative recommendations contained in the Regional Office draft report;
>
> 2) The proposal for establishing an additional treatment facility along the Des Plaines River at some distance from the so-called Clavey Road plant would require detailed studies and the development of additional engineering plans by enlarging the borders of the North Shore Sanitary District by referendum or by legislation to empower the North Shore Sanitary District to acquire rights of way as well as a substantial area of property abutting the Des Plaines River;

3) The subject of covers for the overflow basins at the Clavey Road plant was reviewed by personnel of the Federal Water Pollution Control Agency more than a year ago and was determined to be unnecessary. In any event, a recommendation made to the contrary at this time should also include a recommendation that additional Federal funds be made available for this project;

4) The proposed capacity of the Clavey Road plant was negotiated by the North Shore Sanitary District with the City of Highland Park prior to Federal intervention in the project, and the 18 MGD capacity was determined at that time as a minimum requisite to serve the needs of the district -- both current and projected;

5) The proposals set forth by the North Shore Sanitary District were made pursuant to the negotiations referenced above; and on March 31, 1971, the Illinois Pollution Control Board rendered an opinion which specifically ordered the construction of an 18 MGD facility -- "immediately and expeditiously;"

6) The draft recommendation of the Regional Office contributes to an indefinite delay -- pending which much needed new construction of homes (including residential and multi-family dwellings for lower and middle income groups, elderly citizens, minorities, and others) will be deferred by order of the Illinois Pollution Control Board;

7) It was obviously never intended by the Congress that legislative measures aimed at protecting the environment should be interpreted in a manner which prolongs pollution. With respect to "enforcement measures" against pollution of interstate or navigable waters Congress has specified: "Consistent with the policy declaration of this chapter, State and interstate action to abate pollution of interstate or navigable waters shall be encouraged and shall not, except as otherwise provided by or pursuant to court order . . . be displaced by Federal enforcement action." (33 U.S.C.A. §1160(b)) In this instance, the Regional recommendations would delay pollution abatement, stymie building activities, and destroy state initiative.

There are, of course, other additional arguments -- many of which will be set forth in comments supplied by other persons and agencies. In my opinion, the concession made in Region 5's draft summary of the Environmental Impact Statement that "the overall project is sound" is the paramount consideration which should emanate from the federal level. Efforts to thwart, circumvent, or override a state plan which has been scientifically engineered for water pollution control, approved by the voters, and ordered enforced by an agency such as the Illinois Water Pollution Control Board can only lead to the type of federal intervention which frustrates state and local cooperation.

I am taking the liberty of attaching four communications which I have received recently -- all of which emphasize the urgency of an opinion consistent with the position taken by the Illinois Pollution Control Board.

If you care to direct any questions to me, I shall be pleased to hear from you.

Sincerely,

Robert McClory

Robert McClory
Member of Congress

RMcC/jwo

cc: Senator Charles Percy
Senator Adlai Stevenson
Governor Richard B. Ogilvie
Mr. William D. Ruckelshaus, Administrator
Environmental Protection Agency

ALLEN J. ELLENDER, LA., CHAIRMAN

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WM. W. WOODRUFF, COUNSEL

United States Senate
COMMITTEE ON APPROPRIATIONS
WASHINGTON, D.C. 20510

May 11, 1971

Mr. Francis T. Mayo
Regional Coordinator
Environmental Protection Agency
33 East Congress Parkway
Chicago, Illinois 60605

Dear Mr. Mayo:

I have had several discussions with Representative Robert McClory regarding the immediate expansion of sewerage facilities of the North Shore Sanitary District and preventing spoilage of Lake Michigan.

I have read Representative McClory's letter of May 7, 1971 to you in which he takes exception to the draft environmental assessment prepared by the Region 5 Water Quality Office of the Environmental Protection Agency.

The litmus test which should be applied is to determine how over all environmental control can be achieved. In my judgment a delay is unwarranted and unnecessary and is detrimental to reaching the objectives desired.

After considerable study I support the points Representative McClory makes in his letter and join him in urging that the Environmental Protection Agency take a position consistent with that taken by the Illinois Pollution Control Board.

Sincerely,

Charles H. Percy/ihb
United States Senator

cc: Governor Richard B. Ogilvie
Mr. William D. Ruckelshaus

ROBERT McCLORY
12TH DISTRICT, ILLINOIS

JUDICIARY COMMITTEE

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May 21, 1971

Mr. Francis T. Mayo
Regional Coordinator
Environmental Protection Agency
33 East Congress Parkway
Chicago, Illinois 60605

Dear Mr. Mayo:

This morning I received a copy of the letter which Mr. Alfred W. Lewis, Attorney for the Village of Riverwoods, sent to you regarding the Draft Environmental Impact Statement prepared by your office on April 21, 1971.

While I have already responded to the draft statement in my letter of May 7, I am adding this supplement to my position in the firm belief that if the region's recommendations were carried out, the consequences would be devestating -- not only for the environmental protection of Lake Michigan but also in terms of formulating any plan whatsoever which would be acceptable to the people of northern Illinois.

At this time I would only emphasize the comments made by Mr. Lewis which indicate that there would be very serious opposition from the citizens of the Village of Riverwoods and surrounding area should the federal recommendations be adopted. I would urge you, therefore, to give very strong consideration to the response which you received from the President and the Board of Trustees of the Village of Riverwoods.

In conclusion, I would like to say that I greatly appreciate the efforts expended by your office to give full and fair consideration to all of the citizens who are concerned with the serious problems confronting our joint efforts to combat the spoilage of Lake Michigan. I am hopeful, as you are, for an early resolution to this dilemma -- which, I trust, will work the most good for the greatest amount of people, and will inconvenience as few individuals as possible.

Sincerely yours,

Robert McClory, M.C.

RMcC/gc
cc: Mr. Raymond Anderson, North Shore Sanitary District
The Hon. Charles Percy
The Hon. Adlai Stevenson
William Ruckelshaus, Administrator, EPA

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
360 NORTH MICHIGAN AVENUE, CHICAGO, ILLINOIS 60601

REGION V

April 30, 1971

IN REPLY REFER TO:
5M

Regional Director
Attention: Mr. Gary Schenzel
Water Quality Office
U. S. Environmental Protection Agency
Room 410, 33 East Congress Parkway
Chicago, Illinois 60605

Dear Sir:

This is in reference to Mr. Risley's letter of April 22, 1971 addressed to Mr. Vavoulis regarding the Draft Environmental Impact Statement concerning the application of the North Shore Sanitary District of Waukegan for a sewerage project located in eastern Lake County, Illinois (Sewerage Project Number WPC-Ill.-754).

HUD COMMENT
Our general assessment of the Environmental Statement reviewed is that it is adequate. We have benefited from the observations of local groups (e.g., The Committee to Save Highland Park) which contacted this office to voice objections to this project in its original form and to submit to us various documentation substantiating their position. The most noteworthy issues in opposition were raised in the areas (1) "airborne disease" (comments made by Dr. Bertram W. Carnow, M.D., F.C.C.P.), an area of general concern as evidenced in the recommendation of your Agency, but not within HUD's jurisdiction "by law or special expertise", and of (2) alternative sites.

In the latter area it has been alleged that a more appropriate alternative site for the plant should have been selected. This brings in the issues of the propriety of land use and zoning and consistency with comprehensive planning. On this issue HUD has jurisdiction by law and special expertise, relying heavily on the recognized areawide planning organization (APO) for a substantive position. The Northeastern Illinois Planning Commission (NIPC) is the APO for the area including the project area. NIPC endorsed the subject project in its original form as consistent with the areawide comprehensive plan. Therefore, HUD, in the absence of evidence of flagrant violations in comprehensive planning fundamentals, expresses no objection to the proposed project subject to the exceptions noted in your recommendations. This view is supported by the conclusions reached by state and local agencies that prompt expansion of treatment facilities is necessary to prevent further pollution problems and insure proper development of the project area.

HUD RESERVATIONS

We recognize that some general land use plans (especially in large multi-county areas) do not contain sufficient detail to indicate the desired location of future sanitary treatment plants. In such cases, an APO statement that a given proposed location is consistent with the comprehensive plan may not be an endorsement of a given proposal as best or most appropriately located. There was evidence submitted by local groups suggesting that NIPC's endorsement of the project as originally proposed was ambiguous and based upon insufficient data. Under the circumstances of your recommended modifications in the project, we suggest that NIPC's further comment upon the project be solicited. This issue remains a local matter in which HUD's interests may best be served by local resolution of conflicting considerations.

Sincerely,

Edward M. Levin, Jr.
Environmental Clearance Officer

DEPARTMENT OF THE ARMY
NORTH CENTRAL DIVISION, CORPS OF ENGINEERS
536 SOUTH CLARK STREET
CHICAGO, ILLINOIS 60605

NCDPD-ER

26 May 1971

Regional Director
U. S. Environmental Protection Agency Region V
Attn: Mr. Gary Schenzel
Water Quality Office
Room 410, 33 E. Congress Parkway
Chicago, Illinois 60605

Dear Sir:

This is in reply to your letter to Col. J. B. Newman, Executive Director of Civil Works, Office of the Chief of Engineers, Washington, D. C. dated 22 April 1971. You request comments on a Draft Environmental Impact Statement for a proposed sewerage project by the North Shore Sanitary District of Waukegan, Illinois.

The draft environmental statement has been reviewed and is considered satisfactory. We do feel that this and future diversions will increase flooding on the Des Plaines River. Some communities now suffering from flooding will certainly be affected by these diversions. Flood control studies underway in the Chicago District may help to alleviate this problem.

Sincerely yours,

JAMES W. GILLAND
Colonel, Corps of Engineers
Deputy Division Engineer for
Civil Functions

OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY

JUN 0 3 1971

Regional Director
Water Quality Office
U. S. Environmental Protection
  Agency, Region V
Attention: Mr. Gary Schenzel
Room 410
33 East Congress Parkway
Chicago, Illinois 60605

Dear Sir:

Thank you for sending us a copy of the draft environmental impact statement for a sewerage project in eastern Lake County, Illinois. Since it appears that this project has no transportation implications, we have no comments to offer on the draft statement.

Sincerely,

Herbert F. DeSimone
Assistant Secretary for
Environment and Urban Systems

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

Mr. Clifford Risley, Jr.
Acting Regional Director
Water Quality Office
Environmental Protection Agency
Chicago, Illinois 60605

Dear Mr. Risley:

This is in response to your letter of April 22 requesting comments on the Draft Environmental Impact Statement for a sewerage project located in eastern Lake County, Illinois.

The project consists of construction of a new sewage treatment facility at Gurnee, Illinois, and expansion and renovation of present plants at North Chicago, Waukegan and Clavey Road. These plants will feature tertiary treatment and nutrient removal.

The effects of construction of this project will fall primarily in the area of water quality which is now a responsibility of the Environmental Protection Agency. We have discussed this project briefly with staff members of that Agency, and will defer to their comments and recommendations.

The opportunity to review this Draft Environmental Impact Statement is appreciated.

Sincerely yours,

Roger O. Egeberg, M.D.
Assistant Secretary
for Health and Scientific Affairs

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

JUN 8 1971

Dear Mr. Risley:

On April 22, 1971 you requested our comments on the draft environmental statement prepared by the Environmental Protection Agency for the North Shore Sanitary District's proposed sewage project in eastern Lake County, Illinois.

This report has been reviewed by various units of this Department having special expertise in fields covered by the draft statement, and their comments are included in this letter.

We are impressed with the thoroughness of the draft. The Water Quality Office should be commended for its concise appraisal of the positive and negative environmental effects of the project. If the program is carried out as proposed, the net environmental effect should be most beneficial.

During our review one question arose which the draft statement did not address. We submit this for your consideration. The draft states that under the mandate of the Lake Michigan Enforcement Conference the sewage-treatment plants in Lake County now discharging effluent to Lake Michigan must by July 1, 1972 either divert these effluents to inland rivers or substantially upgrade them through additional treatment. The proposed plan would accomplish the former. In the event that the proposed facilities are not ready to begin operation by July 1, 1972, it is not clear what will be done with Lake County's sewage. Will treated sewage continue to be discharged to Lake Michigan or will partially treated and untreated sewage be discharged to the Des Plaines River basin with obvious adverse impact? It is our understanding that construction of the key treatment plant in the system has been delayed by litigation, and that it is possible that the July 1, 1972 deadline for start-up may not be met. We suggest that this eventuality be discussed in the revised environmental statement.

While no primary recreation benefits would result from the project, the proposal would improve the water quality of Lake Michigan and the Des Plaines and Skokie River basins, thus increasing recreational opportunities. The statement recognizes that a limited amount of open space would be created as the five plants are phased out and utilized as pumping stations. We feel that assurances should be given to insure that these lands remain in open space in the future. In this regard, we suggest that the applicant contact Mr. Matthew L. Rockwell, Executive Director, Northeast Illinois Planning Commission, 400 West Madison Street, Chicago, Illinois 60606, and Mr. Henry N. Barkhausen, Director, Department of Conservation, 102 State Office Building, Springfield, Illinois 62706. They would be in the best position to assess the recreational potentials of these sites and make recommendations for the public use of these areas as they are phased out.

The environmental statement should further indicate that the National Register of Historic Places was consulted and that the development will not have any adverse effect upon important historical and archeological resources, if that is the case. Also, the State Liaison Office should be consulted to determine whether the project would have an effect on properties being considered for nomination to the National Register. The results of such consultation should be reflected in the statement.

We appreciate the opportunity to review the draft statement and offer comments.

Sincerely yours,

Secretary of the Interior

Mr. Clifford Risley, Jr.
Acting Regional Director, Region V
Environmental Protection Agency
33 East Congress Parkway
Chicago, Illinois 60605

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Francis T. Mayo
Interim Regional Coordinator, EPA

DATE: May 20, 1971

FROM : F. Donald Maddox, P.E.
Acting Regional Representative, DWH

SUBJECT: Review of "Environmental Assessment Study" prepared by Committee to Save Highland Park

At Mr. Marshall's request, I have reviewed Appendix B of the subject Assessment Study. My review indicates that the health effects of concern are not related to public drinking water supply, although potential pollution of ground water by seepage from the planned lagoons is mentioned by Dr. Rogoff's statement on "A Microbiological Viewpoint."

Of primary concern, as expressed by Dr. Carnow's statement, are the gaseous pollutants and the particulate pollutants, including aerosols containing bacterial and viral pathogens, which may be emitted by the plant. An evaluation of the accuracy and reliability of the statements made regarding the health effects of possible airborne pollutants would be most appropriate from the expertise available through Mr. Van Mersbergen's office. We understand that Mr. Van Mersbergen has received a copy of this document for review.

F D Maddox

[illegible]

5010-108

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UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Washington, D. C. 20250

MA [illegible] 971

Regional Director
Water Quality Office
U.S. Environmental Protection Agency
Region V
Room 410, 33 East Congress Parkway
Chicago, Illinois 60605

Attention: Mr. Gary Schenzel

Dear Sir:

The draft environmental impact statement for a sewerage project located in eastern Lake County, Illinois, which was sent to Dr. T. C. Byerly with a letter dated April 22, 1971, was forwarded to the Soil Conservation Service for review.

The data submitted with the impact statement shows that interested agencies have made a thorough review and comments on the "Environmental Assessment."

Our only comment is concerning Item 3 of the recommendations on page 37. The impact statement refers to limiting environmental damage during construction. This is a very broad and all inclusive recommendation. In our opinion, this should be more specific. The three items listed in Mr. William Q. Kehr's letter of December 29, 1970, from the EPA Solid Wastes Office should be included in these recommendations to specify the types of environmental damage in mind during construction.

We are pleased to see that our State Conservationist for Illinois, Mr. Howard W. Busch, has had an opportunity to review the environmental assessment for this project.

We appreciated the opportunity to review this environmental statement.

Sincerely,

Norman A. B

Acting Administrator

OFFICE OF THE ASSISTANT SECRETARY OF COM
Washington, D.C. 20230

[illegible] Tech. Prop.

May 11, 1971

Reference: Sewerage Project No. WPC-Ill. 754, North Shore Sanitary District Waukegan, Illinois
Dated: April 21, 1971
DoC-Document Control Number: 7105.10

Mr. Clifford Risley, Jr.
Actg. Regional Director
Region V
Environmental Protection Agency
33 East Congress Parkway, Rm 410
Chicago, Illinois 60605

Dear Mr. Risley:

Your request for review of the referenced document has been received by this office. In order to assure proper evaluation by all appropriate agencies within the Department of Commerce, we shall require 3 additional copies of this draft statement. Our comments, if any, will be forthcoming 30 days following receipt of these copies.
We request that in the future all environmental impact statements directed to any agency of the Department of Commerce for comment be transmitted in 15 copies to the Deputy Assistant Secretary for Environmental Affairs for review and further distribution as appropriate.

Sincerely,

Sidney R. Galler

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

ENVIRONMENTAL PROTECTION AGENCY
Office of Air Programs
411 West Chapel Hill Street, Durham, North Carolina 27701
May 27, 1971

Mr. R. J. Schneider
Acting Regional Director, Region V
Office of Water Programs
Environmental Protection Agency
33 East Congress Parkway - Room 410
Chicago, Illinois 60605

Dear Mr. Schneider:

Mr. Joseph J. Sableski of our Division has reviewed your Environmental Impact Statement for North Shore Sanitary District, Chicago; enclosed are his comments with which I concur.

Sincerely yours,

S. David Shearer
Chief, National Source
Inventory Section, DAT

Enclosure

ENVIRONMENTAL PROTECTION AGENCY
Office of Air Programs

Reply to Attn of:

Date:

Subject: Review and Comments on Environmental Impact Statement for North Shore Sanitary District, Chicago

To: Dr. David S. Shearer, Chief
National Source Inventory Section
Division of Applied Technology

As requested, we have reviewed the Draft Environmental Impact Statement and appendices for modifications to the treatment plants of the North Shore Sanitary District in Waukegan, Illinois.

Estimate of the Situation

According to our understanding of the impact statement, the air pollution problem arises from plans of the NSSD to increase the size of the Cl~~o~~avey Road Sewage Treatment Plant from its present 4.5 MGD capacity to 18 MGD. Over the years, homes have been built to within 150 yards of the present facilities, and these homeowners now object to the expansion of the plant. They have, in fact, initiated legal action pursuant to which testimony has been given that odors from the plant will be a nuisance, that emissions of airborne viruses and pathogenic organisms will occur, and that SO_2 concentrations from incineration of sewage gases will be excessive.

The impact statement shows that the NSSD proposes to cover virtually every possible source of odorous emissions, ventilate the sources, and either scrub the gases with permanganate solutions or incinerate them. In addition, NSSD proposes to take ten separate actions, in Section 5 of the Appendix, to reduce emissions. Among these actions is a proposal to remove hydrogen sulfide from the sludge gas by passing all gas through iron sponge purifiers before burning.

Evaluation of Problem Areas

In his doctoral thesis entitled, "The Emission, Identification, and Fate of Bacteria Airborne from Activated Sludge and Extended Aeration Sewerage Treatment Plants", Paul Kenline reports that bacterial concentrations in air from such plants decrease rapidly with distance from the plant. For example, contamination of the surrounding air extended to approximately 65 feet downwind of aeration tanks under average conditions existing during sampling around an activated sludge plant. For more adverse conditions, contaminants extended out to approximately 200 feet. These findings were for an uncontrolled plant.

odorless, or have a milder, much less offensive odor than the original compound.

The literature does contain references to the use of permanganate scrubbers for odor control from tallow manufacturing; the drying of animal proteins, fats, blood, and feathers; varnish cooking; chicken processing; and the processing of animal hides.

While three different oxidation reactions can take place, depending on the pH of the solution, probably the most effective reaction is that taking place from pH 3-11.

$$MnO_4^- + 4H^+ + 3e^- \rightarrow MnO_2 + 2H_2O$$

The solutions are non-corrosive, and the MnO_2 formed is insoluble, and therefore not a water pollutant, as might be the case with other manganese salts formed at other pH's.

Conclusions

While the literature does not reveal the effectiveness of permanganate scrubbers in killing airborne infectious agents, it would seem reasonable to believe that a powerful oxidizing agent would have such an effect. In addition, the thesis by Dr. Kenline shows that the infectious agents are not dispersed in significant quantities from uncontrolled plants. It is probably, therefore, that no biological contamination will take place from this plant where all sources are covered and vented to controls.

From the literature, it appears that the scrubbers should eliminate odors provided that:

a. The pH of the scrubbing solution is controlled between 8 and 9 by use of a buffered solution (e.g. bicarbonates or borates).

b. Since the absorption time for the odorous compound to get into solution is often the rate-controlling step, a perched tower should be used to create surface area. (This is the type NSSD plans to use.)

c. The $KMnO_4$ solution strength should be maintained between 1 percent and 3 percent. Concentrations of 0.001 percent to 0.1 percent are reported to be ineffective.

d. While not a requirement, the NSSD may find that a water scrubber installed before the $KMnO_4$ scrubber may reduce the permanganate requirements and hence, the operating costs, considerably.

The practice of hooding, or enclosing in buildings, the various sources in a treatment plant is not a common one. I have, however, seen several plants equipped with hooding, to some extent. While it is not possible to judge with certainty from the block flow diagrams in the impact statement the adequacy of the ventilation rates at each source, the overall system does seem to account for all significant sources of odorous pollutants. In general, the system seems well-designed and makes allowance for extra purging of tanks.

Since incineration of odors is a more positive control than scrubbing, the NSSD was wise to choose this type of control for handling the most odoriferous gases in the plant, those from sludge thickening, storage, and loading. In this connection, the 50 CFM from liquid sludge loading looks like it may be inadequate, as such operations usually must allow for inspirated as well as displaced air.

The fume oxidizer should be a direct flame afterburner, operating at no less than 1200°F and having a residence time of at least 0.3 second. Catalytic afterburners are frequently a source of trouble and are well to avoid.

Since the NSSD is to install iron sponge purifiers to remove H_2S in the sludge gas, which I presume they will use as a fuel in the oxidizer, the effluent should not contain excessive quantities of sulfur dioxide. At least, other applications I have seen of this technique have been successful, so that this application could be made to work satisfactorily also. If the sponge is regenerated, the process should be conducted so as not to allow the collected sulfur gases to escape to the atmosphere. Incineration under the conditions specified should kill all pathogens.

The problem of evaluating the scrubbers is more involved. While incineration would be the most effective treatment, there will be approximately 80,000 CFM, in total, to be treated. Clearly, because of the large volume of gas to be handled, scrubbing, if it is effective, is to be preferred over incineration for economic factors alone.

Sewage odors result from the decomposition of nitrogen or sulfur containing organics to amines, indoles, mercaptains, and various other odorous products. The odors associated with these compounds are often related to the functional group in the molecule. The chemical bond by which these groups are attached to the rest of the molecule is often unsaturated and so susceptible to attack by oxidizing agents, of which potassium permanganate is one of the most powerful. The resulting products are often

The incinerator should perform satisfactorily if it is of the direct flame type; temperatures exceed 1200°F, residence time exceeds 0.3 second; and good flame contact and turbulence is maintained within it.

Joseph J. Sableski, Chief
Combustion and Incineration Section
Industrial Studies Branch
Division of Applied Technology

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north shore sanitary district

SECRETARY-GENERAL MANAGER, RAYMOND E. ANDERSON / DAHRINGER ROAD, WAUKEGAN, ILLINOIS 60085 / Telephone: 312/623-6060

ATTORNEY
Murray R. Conzelman

SUPERINTENDENT OF MAINTENANCE
Joseph J. Debevic

CHIEF ENGINEER
H. W. Byers

May 13, 1971

Mr. Gary Schenzel
Federal Environmental Protection Agency
33 East Congress Parkway
Chicago, Illinois 60605

Dear Mr. Schenzel:

Pursuant to the direction of the Trustees of the North Shore Sanitary District I am enclosing herewith the Comments of the District with reference to your Draft Environmental Impact Statement dated April 21, 1971 and released April 23, 1971. If you need further copies, please advise.

Yours very truly,

Murray R. Conzelman

Enclosure
MRC:bw

Murray R. Conzelman
Attorney for North Shore Sanitary District
33 North County Street
Waukegan, Illinois 60085
MAjestic 3-1010

c: Mr. [illegible]
[illegible]

COMMENTS OF NORTH SHORE SANITARY DISTRICT ON DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR SEWERAGE PROJECT NO. WPC-ILL. -754

Under date of April 21, 1971, the Water Quality Office, Region V of the Federal Environmental Protection Agency issued its Draft Environmental Impact Statement concerning Sewerage Project No. WPC-Ill. -754 submitted by North Shore Sanitary District. That Statement provides that thirty days are available for comment following release of the Statement, which occurred April 23, 1971.

The following constitutes the comments upon the Statement by the North Shore Sanitary District. The comments of the District are divided into two major parts. The first part concerns the effect of the Statement as a whole on the project of the North Shore Sanitary District and the second part points out the technical errors in the Statement.

SECTION 1: EFFECT OF STATEMENT AS A WHOLE.

On March 31, 1971, the Illinois Pollution Control Board entered an Order in its cause No. PCB 70-7, 12, 13, 14, The League of Women Voters of Illinois, et al v. North Shore Sanitary District. A copy of this Order is attached to these Comments marked Exhibit 1. The Order followed six days of public hearings before the Illinois Pollution Control Board at which the entire project was thoroughly discussed.

In the Order the North Shore Sanitary District is required to do the following things:

1. To cease and desist from polluting the waters of Lake Michigan and the waters of the Skokie Drainage Ditch to the extent reasonably possible until the construction of additional facilities which are required hereunder.

2. To cease and desist from polluting the air at or near its present facilities to the extent reasonably possible until the construction of additional facilities which are required hereunder.

3. To immediately and expeditiously complete its proposed expansion facilities. Specifically the District was ordered to proceed with the expansion of its Clavey Road Plant to 18 million gallons per day capacity with advanced treatment and to discharge the effluent from this plant into the Skokie Drainage Ditch even after expansion.

4. To prohibit new connections and extensions of the sewer system until the District can demonstrate that it can adequately treat the wastes from these new sources

The Federal Impact Statement aforesaid provides different requirements as follows:

1. The District is ordered to expand its Clavey Road Plant to only 12 million gallons per day capacity instead of 18.

2. The District is ordered to re-evaluate the capacity of its retention basin at its Clavey Road Plant and to cover the entire retention basin.

3. The District is ordered to purchase a site for treatment facilities on the DesPlaines River near the Lake - Cook County Line and immediately build a new facility with a capacity of approximately 18 million gallons per day at that location.

4. The District is ordered to build additional storm water retention at Waukegan, North Chicago and the lakeside pumping stations.

The Trustees of the North Shore Sanitary District have directed their engineers to carefully study the Environmental Impact Statement and to analyze the effects of that Statement upon the current program of the District. Based upon that analysis the Trustees' findings are as follows:

1. If the treatment plants at Lake Bluff, Lake Forest and the three lake front plants in Highland Park were abandoned today and that flow added to the present flow at Clavey Road, the present flow at Clavey Road would be 12.1 million gallons per day. The Federal limitation of 12 million gallons per day would not be adequate and the expanded plant at Clavey Road would be overloaded the day it was completed. As a result, pollution would continue and the embargo placed by the State of Illinois on further connections to the system would not be lifted at that time but would wait until the new 18 million gallons per day plant would be built on the DesPlaines River.

2. The estimated initial cost of providing the additional facilities required by the Federal Impact Statement at Clavey Road and at the DesPlaines River is between 25 and 30 million dollars. This figure is arrived at by using the estimates used by the Federal authorities as follows: It is estimated that the cost of a 18 million gallon per day plant at Clavey Road would be $20,444,000.00. The middle fork sewer is estimated to cost $11,324,000.00, or a total of $31,768,000.00. Subtracting the cost of the cover on the retention basin, which is $4,000,000.00, there is a net total of $27,768,000.00. The estimated cost of a 12 million gallon per day plant at Clavey

Road is $13,566,000.00, and the estimated cost of a 18 million gallon per day plant at the DesPlaines River is $39,854,000.00, for a total of $53,420,000.00. Deducting the preceding net balance of $27,768,000.00, there is a net difference of $25,652,000.00, which would be the difference between the two proposals at March, 1971 construction cost levels. Based upon our experience, an inflation factor of from 10 to 15 per cent per year should be added because it is obvious that the facilities were not built in March, 1971. As a result, the estimated initial difference between the District's proposal and the Federal proposal is between 25 and 30 million dollars.

In other words, the cost of obtaining the present Federal Grant of 11.55 million dollars to the taxpayers of the North Shore Sanitary District would be from 25 to 30 million dollars. In addition, the present overloaded conditions of the sewage treatment facilities of the District would not be relieved until such time as a site could be acquired and a new sewage treatment plant built on the DesPlaines River.

3. The area on both sides of the DesPlaines River for a distance of a quarter of a mile North of the Lake - Cook County Line was subdivided many years ago into the Columbian Gardens Subdivision comprising hundreds of fifty foot lots owned by various individuals. The area North of Columbian Gardens for a distance of about a half of a mile on both sides of the DesPlaines River lies within the Village of Riverwoods, a substantial residential community. There are no sewage treatment plants in the area. It is estimated that a minimum of three years would be required to obtain a suitable site. This is a conservative estimate because the North Shore Sanitary District does not have so-called "quick take" eminent domain powers and cannot acquire title to property until an entire domain procedure has been completed. Obviously numerous parcels of land will extend the time for land acquisition.

In addition, the District has no funds to acquire property and its present bond funds cannot be used for purposes not contemplated in the bond issue, nor can they be used outside of the District and the area of the DesPlaines River is outside the North Shore Sanitary District. Assuming these problems could be eventually solved, it would take an additional three years to design and construct a plant, so that at the very minimum, assuming no further delays or litigation, it would be at least six years before a new plant could be completed.

The Federal requirement that the retention basin at the Clavey Road Plant be re-evaluated and completely covered presents an anomaly. The requirement that the basin be covered was found to be unreasonable by the Circuit Court of Lake County, Illinois after an extensive trial on the question and this Court's decision has recently been upheld by the Appellate Court for the Second District of Illinois, (Licata, et al v. North Shore Sanitary District, Appellate Court, Second District, Nos. 70-133 and 70-162). Over a year ago the Federal Water Pollution Control Agency reviewed this requirement and determined that the cover was not necessary. The City of Highland Park, upon a review, has found that it is only necessary to cover the presedimentation portion of the retention basin and not the whole basin, and finally, the Illinois Pollution Control Board has found that it is not necessary to cover the entire retention basin.

As a result of the Environmental Impact Statement, the North Shore Sanitary District is in a dilemma and cannot comply with the Illinois Pollution Control Board Order and the Environmental Impact Statement at the same time because they have basic differences. The District cannot afford the Federal Grant offer and would have to spend far more to comply with the conditions than it gets from the Federal government. If it attempts to comply with the requirements of the Federal Impact Statement it will substantially postpone the day when the pollution of Lake Michigan can end and any further connection to the District's facilities can be made. The life of Lake Michigan may not last that long and the economic effect of a six year ban on construction in the North Shore Sanitary District would be catastrophic.

SECTION 2: TECHNICAL ERRORS IN DRAFT ENVIRONMENTAL IMPACT STATEMENT.

The North Shore Sanitary District does not desire to pick apart the Draft Environmental Impact Statement and tne following comments are limited to correcting those errors of substance which affect the judgment made.

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Paragraph 2 on page i indicates that the Grant offer was made on April 22, 1970. It does not indicate the fact that this offer was accepted by the North Shore Sanitary District on May 13, 1970, nor does it indicate that the Federal regulations requiring an environmental assessment did not become effective until October 1, 1970.

Throughout the Draft Statement the phrase "supplemental treatment" is used. It is felt that a more definitive term is "advanced wastewater treatment".

Throughout the Statement the District is described as being largely residential. This is not the case since in the Northern sector and specifically in the Waukegan - North Chicago area there are substantial concentrations of heavy industry, whereas in the Southern sector the area is largely residential.

On page 5 it is stated that the Planning Commission of the City of Highland Park recommended "That no Special Permit be granted for the expansion of the Clavey Road Plant". In fact, the exact language of the Planning Commission was "...the Plan Commission cannot recommend approval of the Petition as submitted by the North Shore Sanitary District".

Subsequently the City of Highland Park did, in fact, grant the Special Permit subject to conditions. These conditions have been fully litigated and the project of the District will comply with all of those conditions found to be valid by the Circuit Court, the Appellate Court and by the Illinois Pollution Control Board.

On page 10 the Statement considers the probable impact of the District's project on the Mississippi basin.

On page 38 it advises a broad impact study of the environmental consequences of diversions of water from one watershed to another. The North Shore Sanitary District has had a diversion allocation from Lake Michigan for two and one-half years pursuant to Order of the Supreme Court of the United States. The project of the District is contingent upon the diversion of Lake Michigan and that question is settled. If it is necessary to re-evaluate diversion, then it will mean that the last two and one-half years has been wasted and that the District must start all over again with its program. These matters have been resolved and should not be reviewed.

Paragraph B on page 12 concludes that diversion of effluent into the DesPlaines River will downgrade the quality of the water. This is not the fact. In fact, the quality of the water will be upgraded. Upgrading the quality of any stream inherently results in the growth of less pollution-tolerant organisms and is obviously not "an adverse environmental effect".

Paragraph C on page 12 contemplates that the effluent from the North Shore Sanitary District will be the only discharge to the DesPlaines River. This is not the fact since the DesPlaines River is not now "in its natural state" and it is presently receiving and will continue to receive other effluent from growing communities within the DesPlaines River watershed.

The second paragraph on page 14 states that the Skokie Lagoons were formerly used for swimming and boating but that their use has been curtailed. The fact is that the Skokie Lagoons were never used for swimming and that their use for boating has greatly increased over the past years and is at its height today.

The first paragraph on page 16 deals with discharging the effluent from Clavey Road into the Skokie River. That, in fact, has been ordered by the Illinois Pollution Control Board.

The so-called inconsistency described on pages 16 and 17 of the Statement is not in fact inconsistent since the two approaches, the first at the Northern end of the District and the second at the Southern end of the District simply recognizes the fact that these are different areas. At the Northern end of the District there is heavy industry and the Southern end of the District is largely residential. The areas are different and the project treats them differently. This is not inconsistent.

In paragraph A on page 19 again the so-called "inconsistency" is pointed out and it is noted that storm water overflows in the Waukegan area should not be allowed to continue. As we have already said this is a different area and consists of different land uses. In addition, the proposal of the North Shore Sanitary District in this area meets all Federal and State water quality standards and there is no evidence that occasional overflows of treated storm water will have a significant adverse effect on the environment. It is unreasonable to request the District to do more than comply with Federal and State standards to qualify for a Federal Grant. The District makes the same comment with reference to paragraph 1 on page 22 and states further that the retention is not "seemingly inadequate" but will, in fact, comply with all Federal and State standards. In addition, the District is exceeding existing State and Federal standards at the Southern sector. The footnote on page 9 of the Impact Statement does not, but should, state that this is not a Federal requirement but that the District is doing it anyway.

The statement at the bottom of page 22 that "Possible air-borne infection may also result from an open retention basin" ignores the testimony of Dr. Deinhardt and Mr. Klassen set forth at page 25 of the Statement. Dr. Deinhardt testified that there is no danger from air-borne infection and Mr. Klassen testified that in all the history of sewage treatment in Illinois there has been no case of a person working in the treatment plants becoming ill as a result of his employment. In addition, even Dr. Carnow testified there is no danger of air-borne infections from quiescent bodies of sewage, but that the problem could arise from bodies of sewage under aeration. Therefore, it follows that no problem can arise from the retention basin because the wastewater in the retention basin is quiescent and not aerated.

The Metropolitan Sanitary District of Greater Chicago operates a 400 million gallon per day plant in the Village of Skokie. This plant is in a residential area and has no covers at all. The Metropolitan District also operates the famous Stickney Plant, which is the world's largest sewage treatment plant. It has a capacity of 1 billion gallons per day but it does not have any covers. If Dr. Carnow's speculations are to be seriously taken, then these plants should be covered or abandoned and yet neither the Federal nor the State government have made any such requirements. If they do not constitute a substantial hazard to health, then obviously a 18 million gallon per day plant at Clavey Road constitutes no hazard.

The statement in the third paragraph on page 23 that a capacity of 12 million gallons per day would be adequate for the next several years at Clavey Road is incorrect. In fact, the actual flow at the Clavey Road Plant if the lake front plants in Lake Bluff, Lake Forest and Highland Park were added was 12.1 million gallons per day in 1970. Therefore, if the Clavey Road Plant were expanded to 12 million gallons per day it would be overloaded the day it was completed. The new plant would downgrade the environment, and it would violate the Environmental Protection Act of Illinois. This would continue until such time as a new plant could be built elsewhere to receive the additional effluent.

The statement at the bottom of page 23 and the top of page 24 that the levels of storm water infiltration will be substantially checked when the lakeside plants are phased out is incorrect. There is no assurance that infiltration will be checked and that is the reason the retention basins are necessary to retain the storm water that infiltrates so that it can be treated and not discharged to Lake Michigan without treatment.

The quote from Dr. Carnow on page 26 regarding an increase in materials ignores the fact that a large portion of the expanded Clavey Road Plant is proposed to be covered. In fact, the gist of Dr. Carnow's testimony was that he did not know whether there was a hazard from air-borne virus and bacteria but that no sewage treatment plant should be built until this could be determined. Obviously sewage treatment cannot wait for this research if Lake Michigan is to live and if the North Shore Sanitary District is to carry out the orders of Court and the Illinois Pollution Control Board.

The statement on page 30 that a new plant could be built at the DesPlaines River by 1974 is not realistic. As we have pointed out land acquisition will take longer than that, the property is not now in the North Shore Sanitary District, and there are no funds available to build this new plant. The North Shore Sanitary District does not have the so-called "quick take" condemnation power and the District could not put a new plant in that location for a minimum of six years.

The first full paragraph on page 31 indicates a "feasible alternative" by limiting the expansion at Clavey Road to 12 million gallons per day. As we have pointed out before this is not "feasible". In addition, this finding ignores the fact that chlorination facilities are already under construction at Clavey Road with a design capacity of 18 million gallons per day. A change in these facilities will cause further delays and increase the cost of the plant under any alternative.

The second full paragraph on page 36 recommends immediate development of the DesPlaines River site with care taken in site selection. The drafters of the Federal Report have obviously not made any study of this question and as pointed out in these comments the selection of a site on the DesPlaines River is very difficult, costly and time consuming. This recommendation may well transfer the controversy, the need for an environmental assessment and an environmental impact from Clavey Road to the DesPlaines River. The problem will not be solved. It will simply be delayed, its costs increased and its site transferred.

The requirement of paragraph 1(a) on page 37 that additional storm water retention be provided at Waukegan, North Chicago and the lakeside pumping stations exceeds Federal and State water quality standards. The District is already proposing facilities which will meet all such standards.

The District's project already precludes discharge of storm water at the lakeside pumping stations at Lake Bluff, Lake Forest and Highland Park. Therefore, there is no reason for retention facilities at these "lakeside pumping stations" because there will be nothing to retain.

The requirement of paragraph 2 on page 37 relating to the new site on the DesPlaines River has already been covered. This site cannot be "immediately acquired" and it cannot be "immediately developed". The District has no funds for this project and the property is not located within the District.

The District has already complied with the provisions of paragraph 3 on page 37 requesting that reasonable care be taken during construction to limit environmental damage. One of the conditions of the permit issued by the City of Highland Park which the Courts found to be valid required the District to make every reasonable effort during construction to comply with standards. In addition, the Order of the Illinois Pollution Control Board requires this compliance to the extent reasonably possible.

CONCLUSION

In conclusion the North Shore Sanitary District is unable to comply with the new requirements contained in the Draft Environmental Impact Statement because it is under Order of Court and under the Order of the Illinois Pollution Control Board to do something different.

The impact on the environment of an 18 million gallon per day plant at Clavey Road is not significantly greater than that of a 12 million gallon per day plant, and a 12 million gallon per day plant at Clavey Road will not solve the problem of overloading.

It is impossible to build a new 18 million gallon per day plant on the DesPlaines River in less than six years and this assumes that property can be acquired and that the District will have funds to acquire the property and build the plant. The District presently has no such funds, nor does it have any authority to raise funds for that purpose.

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The additional initial cost of complying with the new Federal requirements is estimated to be from 25 to 30 million dollars, whereas the total amount of the Federal Grant is 11.55 million dollars. Acceptance of the Federal Grant with its new conditions would delay the project of the District at least six more years. Lake Michigan and the people of the North Shore Sanitary District cannot wait for six years.

The District respectfully urges that the Impact Statement be modified in accordance with the Orders of Court and the Illinois Pollution Control Board so that the District may proceed expeditiously with its project to protect its citizens and the life of Lake Michigan.

NORTH SHORE SANITARY DISTRICT, A
Municipal Corporation of Illinois

STATE OF ILLINOIS
POLLUTION CONTROL BOARD
189 WEST MADISON STREET SUITE 900
CHICAGO, ILLINOIS 60602

DAVID P. CURRIE, CHAIRMAN
SAMUEL R. ALDRICH
JACOB D. DUMELLE
RICHARD J. KISSEL
SAMUEL T. LAWTON, JR.

TELEPHONE
312-793-1620

May 20, 1971

Mr. William Ruckelshaus
Administrator
Environmental Protection Agency
1626 K Street
Washington, D. C. 20460

Re: Draft Environmental Impact Statement

Sewerage Project Number WPC-Ill.-754
Submitted by North Shore Sanitary District,
Waukegan, Illinois

Dear Mr. Ruckelshaus:

On April 21, 1971, the Water Quality Office, Region V, Federal Environmental Protection Agency issued a Draft Impact Statement concerning the proposed improvements to be made to the entire sewage treatment system of the North Shore Sanitary District. According to the Draft Statement, any person is entitled to file comments about the report within thirty days after its issuance. This letter is submitted as the fully approved comments to the report by the State of Illinois Pollution Control Board.

It is the opinion of the Board that the Draft Statement should not be finally accepted by the Administrator, but rather the North Shore Sanitary District should be authorized to proceed with its expansion program which is in substance detailed in the enclosed opinion of the Board which opinion was issued on March 31, 1971, almost one month prior to the issuance of the Draft Statement. The Board has since held two days of hearings (April 29 and 30) to determine the exact, detailed nature of the District's expansion plan, the timetable for completion, the costs involved and the availability of interim measures to reduce the pollutional effect of the District's discharges on Lake Michigan. Another order of the Board is expected in the next few weeks. This letter will attempt to outline some of the major deficiencies of the Draft Statement.

Of prime concern to this Board is that the project of the District proceed with the utmost haste. As the enclosed opinion details, Lake Michigan, and particularly the shore water area to which the District's inadequately treated sewage is discharged, is polluted. This situation will continue for so long as the District discharges its wastes into the Lake; therefore, the District must remove its wastes discharges from the Lake as soon as possible. Until the Draft Statement was made public, this Board's order seemed to be the final determination by courts and administrative agencies as to what the District should do. Now with an entirely new direction from yet another agency (the Federal EPA) the District is put in a real, and uncalled for, quandary. The mere issuance of the report has done nothing more than add to the confusion and controversy surrounding the expansion program of the District, and as a result, delay the project. The entire expansion program of the District which contemplates completion by 1974 is based on quick approvals by both the Federal and State governments. With the unnecessary confusion of this Draft Statement, the Federal approval does not appear forthcoming--thereby causing expensive delay.

Perhaps before the frustration and anxiety of the Board and the majority of the people living in the District can be understood, a brief history of the District's plans should be given. In 1963, the District was advised by its consulting engineers that its plants were either inadequate at that time or would be inadequate in the very near future. The District began planning for expansion at that time, but since diversion of Lake Michigan water was part of its overall plan, the District was told by the attorney representing the State of Illinois in the then pending Lake Michigan diversion case, that the District should not proceed publicly with any plans to expand its facilities while that diversion case was pending. In 1967,when the diversion case was finally decided by the Supreme Court of the United States, the District was given the "go ahead" to start its expansion program. The District established a plan at that time and took it to its constituency in the form of a $35 million bond issue. The bond issue was approved by the voters of the District in 1968, and the District tried to start to implement its expansion program. This was not to be, however. At that point in the history of the District's attempt to implement its expansion program began probably the most litigious period in the life of any municipality, let alone a sanitary district. The District has been subjected to at least eight lawsuits or administrative proceedings. A detailed outline of these suits appears in the enclosed opinion of the Board. (See pages 25 and 26.) The results of the delay have not only affected the waters of Lake Michigan and the Skokie River, but have substantially increased the cost of the expansion facilities. In 1967, it was estimated that the expansion facilities would cost $65 million. Recently the District estimated that the expansion would cost $95 million with some additional facilities. Further delay will add to the cost. It is estimated that for each month of delay, the cost will be increased by about 1%. On that basis a delay of even six months could mean an additional cost to the people of the District of almost

$5 million. Any delay, no matter how little, can seriously affect the cost of the expansion, and more importantly, it can affect the quality of water in Lake Michigan, and the Skokie River.

Speed in completing projects of the nature contemplated by the District is not necessarily the prime factor in matters such as these. Certainly, the expansion project must make environmental sense. We think that the expansion as contemplated by the District, and changed by this Board after a full public hearing makes that kind of total sense. The present plan of the District is a good one. Very basically, as outlined in the Draft Statement, the District's expansion program, when and if completed, will include tertiary treatment, nutrient removal, and adequate chlorination at all of its facilities. No wastes will be discharged into Lake Michigan, except on rare occasions when the retention basins at the various plants can't handle the excess water during times of heavy rainfall. Two of the plants (Waukegan and Gurnee) will discharge into the Des Plaines River, and the third, the Clavey plant, will discharge into the Skokie River. The total effluent which the plants will be able to handle will be 48 million gallons per day on an average basis. If the plan proposed by the Draft Statement were sound and reasonable this Board would adopt it. The simple truth is that it is not. It is inconsistent on its face and should be rejected.

How is the Draft Statement in error? First, the entire basis of the Statement is that the District's total capacity, even when the expansion program is complete, will be inadequate to handle the sewered population in the year 1990. While the drafter of the report does not state that this is the major premise on which the report is based, it is obvious that it must be since the Draft Statement calls for the addition to the system of 12 million gallons per day capacity to the system. In recommending that the additional capacity be put on line, the Draft Statement should unequivocally justify that that additional capacity is in fact needed in the foreseeable future. It doesn't! The 1990 sewered population set forth in the Draft Statement is estimated to be 350,000. Using the customary figures that each person contributes approximately 125-150 gallons per day to a sewage treatment plant, this would mean that the average waste flow to the District's plants would be between 43.75 and 52.5 million gallons per day, with the average being about 48 million gallons per day. This is the exact average flow which the present plans of the District contemplate being handled by the expanded plants of the District. Every pollution control agency should always demand greater and better treatment, but not in the case where that plan delays plans which are more than adequate, and not where there is an unreasonably significant increase in cost in requiring that additional capacity. The additional capacity is simply not justified.

Second, the additional facilities add over $33 million to the already high cost of the expansion project. This figure is determined by reviewing the figures presented in the table of costs made a part of the Draft Statement. The estimated cost for a facility at Clavey with 18 mgd capacity is $20.44 million. The total cost of an 18 mgd plant on the Des Plaines ($39.85 million) and a 12 mgd plant at Clavey ($13.56 million) is $53.42 million, thus the difference between the District plan and the Draft Statement plan is $33 million. It is our understanding that the maximum federal contribution to the District's expansion program is about $33 million, therefore, if the District merely does what it has planned and been ordered to do by this Board, the loss of federal funds will have little impact as long as the Federal Government insists on the District building more capacity than is needed. If the Federal funds are used, they will only be used to construct facilities ordered by the Federal plan and thereby have no impact on the total project.

Third, the Draft statement admits that presently there is no indication of a health hazard as a result of air borne diseases from the sewage treatment plant. Certainly, speculation in the scientific community is that there may be some problem from biological sewage treatment plants, but the proof is non-existent. Since their inception, sewage treatment plants have been located in areas where people live. The plants must be where people are whether it be in a residential area, or an industrial area (where people work), because the plant treats the waste of people. Yes, we agree that additional study must be done to determine what, if any, effect there is between the plants themselves and the transmission of viruses and bacteria. These studies may in fact dictate that plants should be completely covered and located in areas where people do not exist. But that conclusion is mere speculation at this point. To require as a result of the speculation of a few scientists that substantial sums of money be expended, and the Lake be sacrificed, is almost a criminal act. Further, if we assume, as the Draft Statement purports to indicate, that care and caution must be taken in locating treatment plants in residential areas because of the possible transmission of viruses and bacteria from the plant to those living in the locality, we must still disagree with the conclusions of the Draft Statement--which are reduce the volume the plant can handle and cover the detention basins. If a virus and bacteria problem exist, what significant thing is accomplished by reducing the size of the plant from 18 to 12 mgd? None is demonstrated in the report because there are no logical reasons which can demonstrate any differences. If the problem really exists, isn't the alternative that all plants in all parts of the United States be moved from places where people live and work? Why stop at the Clavey Road plant--what about the plants of the Metropolitan Sanitary District of Chicago, the City of Detroit, the City of New York, etc., etc?

Shouldn't they all be moved if the problem is a real one? -- These questions focus on the fact that if the Draft Statement is adopted, a dangerous precedent is being set, without scientific input and proof.

Fourth, the estimated average volume of waste going into the Clavey plant will be when the new sewers are installed, 11.3 mgd. Yet, the Draft Statement would require the Clavey plant to be reduced in size from the presently contemplated 18 mgd to 12 mgd. A larger facility (18 mgd) would be built on the Des Plaines to handle the excess waste water. Until that larger facility would be built however, (which according to the Draft Statement could not be done earlier than 1974) the Clavey plant would not be of adequate size to handle 11.3 mgd on the average. Even worse, the District's consulting engineer recently estimated that the average flow to the Clavey plant upon completion of the presently contemplated sewer system bringing wastes to that plant will be 12.1 mgd. Thus, on many days the Skokie River would receive inadequately treated wastes. This is indeed an unacceptable interim measure.

Fifth, one of the recommendations in the Draft Statement is that the EPA (Federal) initiate "a broad impact study of the environmental consequences of diversions of water from one watershed to another." What this apparently means is that the EPA should open up the Lake Michigan diversion case--if it could be done--to look at its "environmental consequences." Since that is a U.S. Supreme Court decision, we suggest that review of that decision is not available at the whim of the Federal government. That case was tried over a long period of time with extensive expert testimony--Does the EPA (Federal) now suggest it was or could be wrong, and therefore should be opened?

Finally, two specific errors in the Draft Statement should be called to your attention.

1. On page 13 of the Draft Statement the following appears:

> ". . . Clavey Road facility discharges its effluent into the Skokie River at a point . . . approximately 5 miles from the Skokie's confluence with the Illinois River." (Emphasis supplied).

We should point out that the Illinois River begins at the confluence of the Des Plaines and Kankakee River at least 60 miles from the discharge pipe of the Clavey plant. What the author undoubtedly meant to say was the "confluence with the Chicago River".

2. On page 14 of the Draft Statement the following appears:

> ". . . the IPCB has rules . . . that an effluent from the Clavey Road facility must be given tertiary treatment before discharge into the Des Plaines River" (Emphasis supplied).

As can be easily seen by the Board's order which is made a part of the enclosed opinion, we specifically held that the Clavey facility must discharge its effluent into the Skokie River.

For all the reasons stated in this letter plus the reasons stated in the enclosed opinion, we ask that the Administrator not accept those provisions of the Draft Statement which are inconsistent with the recommendations and orders of our Board. We look forward to the Administrator's decision coming in the very near future and being in accordance with the recommendations and orders of this Board.

Very truly yours,

Richard J. Kissel
Member

RJK:bt

Encl.

COMMENTS
OF THE
LEAGUE OF WOMEN VOTERS OF ILLINOIS
TO THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR SEWERAGE PROJECT NO. WPC-ILL-754
INVOLVING THE NORTH SHORE SANITARY DISTRICT

These comments are addressed to the Draft Environmental Statement issued by the Water Quality Office, Region V of the Federal Environmental Protection Agency for Sewage Project Number WPC-Ill-754 submitted by the North Sanitary District of Waukegan, Illinois.

One would like to think that this, the first draft environmental statement by the Federal Environmental Protection Agency, would be a model of excellence and an example for others to follow. It instead is a disgrace. Detailed facts will be set forth herein in the hope that the final statement will overcome the gross deficiencies of the draft statement and will be something which the Federal Government can point to with pride. A recent Federal District Court case (EDF v. Corps of Engineers) indicated that this report and all others must be attached to the final report and must receive the Federal Environmental agencies' attention and comments.

The draft statement makes three key changes to the plans of the North Shore Sanitary District all involving the Clavey Road Plant. They are (1) the plant is too large for a residential neighborhood and thus should be reduced from a capacity of 18 million gallons per day to 12 million gallons per day and its retention basins must be reduced from their 20 million gallon size to a lesser size (10 million gallons was orally suggested by the draft statement's author) and (2) the Clavey Road Plant's retention basins must be covered and (3) an 18 million gallon plant should be promptly built on the Des Plaines River with covered retention basins. The League objects to these changes for the facts do not support them. Further the League objects to the Federal Environmental Protection Agency halting grant funds to the portions of the North Shore Sanitary District's plan to which the Federal Government does not object. The delay caused by the Federal Government's withholding funds granted to the North Shore Sanitary District over a year ago is quite serious. In the Illinois Pollution Control Board hearings on this subject it was brought out that presently bacteria discharged in Lake Michigan and the Skokie Lagoons from sewage which cannot be properly treated by the overloaded facilities of the North Shore Sanitary District are causing a clear and present danger to the health of boaters and swimmers from private beaches. Further, the health hazard has forced the closing of all public beaches in Lake County, Illinois and still further the chemicals in the waste from this sanitary district is leading Lake Michigan close to a point of no return in the euthrophication process. So testified Dr. Eugene Stoermer of the Great Lakes Research Center at the University of Michigan. He stated it would take Lake Michigan over a hundred years to flush itself of these chemicals. New types of algae which

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AESTETIC CONSIDERATIONS OF THE SIZE OF THE CLAVEY ROAD PLANT

The author of the draft statement states that the proposed Clavey Road plant expansion should be limited to a 12 million gallon per day (MGD) capacity instead of an 18 MGD capacity. He states that an 18 MGD plant would be just too large for a residential neighborhood. Yet, he does not indicate the difference in the physical size of the two plants. He probably never attempted to ascertain this and, therefore, his conclusions are subjective rather than objective. Further, he ignores the fact that landscaping could negate the presence of an 18 MGD plant. There is a large buffer strip between the plant and the homes that could be planted with trees and bushes so as to generally hide the plant from the homes. The plant will be a one story plant so this should not be too difficult especially since the homes in the area are mostly one story ranch style homes. The proposed covering of the retention basins adds a physical presence which otherwise would go unnoticed. That covering is unnecessary as we herein will point out. Further, the covering, if made, will not be so high as cannot be obscured by trees and bushes. The engineer for the North Shore Sanitary District stated that proper landscaping would diminish the effect of the plant's presence. Page 72 of the appendix of the draft statement should be consulted to view the area around the plant and its proximity or lack thereof to houses. That picture will also show how traffic to the plant does not go through residential streets but goes in and out a large private drive from a main Highland Park street which is an exit street for an expressway which is a two minute drive from the plant.

The League also believes that the Federal Environmental Protection Agency should not be acting as a local zoning board regarding the size of buildings to be built. The U.S. Water Pollution Control Act as amended states clearly in Section 1(a) that "it is hereby declared to be the policy of congress to recognize, preserve and protect the primary responsibilities and rights of the States in preventing and controlling water pollution." Other laws and regulations state that local authorities are not to be preempted if they have made a reasonable backed determination of an essentially local problem. A federal official of the Chicago Regional Office recognized this when he testified before the Illinois Pollution Control Board (at page 707 of the transcript) as follows: "Big Brother sitting in Chicago or Washington has not tried to interfere on where you are going to locate a particular treatment plant. The Federal Government does not participate in site costs nor has it participated in site selection. The question of site selection from its inception...is an obligation and responsibility of the local regulatory agency in addition to being a very strong responsibility of the state water pollution control agency and by the time we receive a grant application the question of site selection whether for a new plant or for expansion is the type of question that should have been resolved". The question of the site for an 18 MGD plant was resolved between the North Shore Sanitary District and the City of Highland Park in a court settlement and the Clavey Road plant is located in Highland Park.

Further, the Federal Government recognized that a local regional planning agency should review the plans of the North Shore Sanitary District. The Federal Government authorized an additional 10% in funding if the regional planning agency approved the plans of the North Shore Sanitary District. That planning agency was the Northeastern Illinois Planning Commission which wrestled with the Clavey Road Plant question for a long time before deciding to approve the North Shore Sanitary District's plans. This planning commission's final decision is somehow ignored by the author of the draft statement who also gives little consideration to the approval of the Lake County Regional Planning Commission, and of the Illinois Environmental Protection Agency both of which studied the problem. The author also places himself above the Courts of Lake County which considered the new plant after hearing evidence and places himself above the Illinois Pollution Control Board which held extensive hearings during which said author walked in and out. Such attempted preemption of the functions of state and local agencies, commissions and courts is improper when these bodies have strenuously and carefully considered the problems and have independently reached the common conclusion that the North Shore Sanitary District's plan for an 18 MGD plant at Clavey was proper.

THE REDUCTION IN SIZE OF THE CLAVEY PLANT AS SUGGESTED IN THE DRAFT STATEMENTS IS WRONG AND WOULD HAVE HARMFUL EFFECTS.

The author of the draft statement states that the Clavey Road plant should be reduced from 18 MGD to 12 MGD and the retention basins should be reduced from 20 MGD to about 10 MGD (he stated 10 MGD orally). He stated that this size plant would suffice until an 18 MGD plant would be built on the Des Plaines River. This 18 MGD plant was not contemplated by the North Shore Sanitary District and even if it built, with condemnation problems, drafting problems etc., that plant's operation would be delayed for a long time. The author of the draft statement contemplates operation during or after 1974 which the League feels is being highly optimistic. Based on current flow figures an 18 MGD plant with 20 MGD retention basins are needed now.

The author of the draft statement presumes that the current average flow to the Clavey plant from diverted plants and from areas it now serves would be average 11.3 MGD. In testimony on March 30, 1971 before the Illinois Pollution Control Board, the North Shore Sanitary District states, based on 1970 year's figures, that an average of 6 MGD would be diverted to the expanded Clavey Road from the five lake front plants which are to be closed added to an average of 6.1 MGD from the area it now serves for a total average of 12.1 MGD. With this average flow the 12 MGD plant and the 10 MGD retention basin would soon be overloaded. However, in March of 1971, the Clavey Road plant, according to that testimony was receiving an average flow of 7.1 MGD instead of the 1970 average flow of 6.1 MGD which would cause a total of 13.1 MGD on an average. But this average does not include the flow currently received from Ft. Sheridan (which may or may not stay in use) which averages between .5 and .7 MGD overloading the 12 MGD plant. However, it must be recognized that a plant cannot merely be built for average flow. It must be able to handle peak flows. Testimony was given in the Illinois Pollution Control Board hearings that based on experience the 18 MGD plant with 20 MGD retention basins was expected to overflow at least once in its first year of operation and would be filled to capacity on several other days that year. How can we then cut the size of the plant by 1/3 and the retention basin by 1/2. And let us look at maximum flow figures. Flow figures from the five lake front plants reach 9 MGD especially in the spring rather than the 6 MGD considered by the author of the draft statement. The League requested maximum flow figures for the five lake front plants from Greeley and Hanson, and the North Shore Sanitary District's engineers. In a letter dated May 14, 1971 they stated the following:

> "The design maximum flows at the lake front pumping stations, determined by observation of actual conditions and water levels at times of peak flows and analysis of the hydraulic conditions are as follows:
>
> | | |
> |---|---|
> | Lake Bluff | 16.0 MGD |
> | Lake Forest | 9.3 MGD |
> | Cary Avenue | 20.5 MGD |
> | | 45.8 MGD" |

The two other lake front plants were not mentioned in that letter. That letter also stated that 23 MGD flows were received at Clavey Road at various times. From observing records of

Sanitary District for the Clavey Plant, it is noted that in May and early June of 1970 there was one flow of 16.31 MGD, one of 16.42 MGD, one of 16.89 MGD, one of 18.04 MGD, one of 19.26 MGD and one of 26.74 MGD. Some of these flows were back to back. On June 8, 1969 there was a flow for just the Clavey area of 23.08 followed on June 9, [illegible] a flow for that area of 21.80. In light of the above a 12 MGD plant with a 10 MGD retention basin would be obsolete when built.

If the Clavey plant is overloaded when built, the unfortunate necessity of a building ban in the Highland Park area due to overloaded sewage plants would continue harming that area. Robert Hartley of the Chicago Regional FWQA office testified under subpoena before the Illinois Pollution Control Board (at pages 287-89 of the transcript) that the Federal Government would only permit bypassing in an emergency under present regulations. He said that if a sanitary district had reason to suspect that at certain times of the year there would be heavy rainfall, they would have to enlarge facilities to handle that rainfall. From the figures we have an 18 MGD plant with 20 MGD retention basins is necessary to handle the flow that the expanded Clavey plant will have to handle.

The author of the draft statement also underplays the area which the Clavey Plant empties into namely a flow by the 300 acre Botanical Gardens,(a park to be enjoyed by tens of thousands when it is complete)and the Skokie Lagoons. The Skokie Lagoons cover 700 acres of land downstream from the Clavey Plant. They were dredged. They used to be filled with bass, sunfish and carp. Then as the Clavey plant became overloaded the bass and perch perished. Last winter National Geographic gave national coverage to a fish kill of thousands of carp in the Skokie lagoon due to an ice cover on water whose oxygen was depleted by oxygen consuming organic waste from the Clavey sewage plant, the main source of such waste. Francis Mayo, Acting Coordinator of EPA Region V was quoted in that article on other matters and must have been aware of that kill. Some fishing is still done in these lagoons. People sail and canoe on them. During the summer people picnic there. But the numbers of these people have been declining over the last years due to sewage in the water from the overflows from the Clavey plant. A 700 acre recreation center is going to waste and it is passed over lightly by the author of the draft statement. People who come in contact with the water can become diseased due to its not being treated. The Illinois Pollution Control Board considered this problem and said that the 18 MGD effluent with tertiary treatment would flush these lagoons and make this 700 acre recreation spot bloom again. However, if the Clavey plant is restricted to 12 MGD it will not handle all wastes and shameful pollution of the Skokie Lagoons will continue. Some people from the poor areas of Chicago used to come here to enjoy the beauty of life as did thousands of other people who used the lagoons. One of the poorer people was quoted in the Chicago Tribune on February 28, 1971 as saying that what is being done to the Skokie Lagoons is theft from him and his family. It is, so is the continued fouling of the Lake.

THE FORCED EXPENDITURE OF MILLIONS OF DOLLARS TO COVER RETENTION BASINS DUE TO SUPPOSED ODORS AND SUPPOSED VIRUS DANGERS IS WRONG BECAUSE SAID DANGERS WILL NOT EXIST.

The author of the draft statement believes that the retention basins on the Clavey plant and on his proposed Des Plaines Plant should be covered due to odor and disease problems. The covering of a 20 MGD retention basin was estimated by the engineers at the Illinois Pollution Control Board Hearing to be 2-1/2 million dollars. A covering for a 10 MGD retention basin would cost in excess of $750,000. If hazards cause the covering at these plants, all similar plants should be covered. Facts indicate that the covers will not be necessary at the expanded Clavey Road plant. The author of the draft statement confines himself to odor problems and disease problems involving the retention basins because he recognizes the sophisticated system involving catylitic (now thermal) combustion, oxidizing with alkaline permanganate, negative pressure to prevent leaks out of the buildings, forced air and many other protective measures to stop odor and other contamination.

The author of the draft statement wants the retention basins covered because "a malfunction of mechanical equipment related to the operation of the retention basin or presedimentation basin followed by untimely corrective measures would in theory produce a very unpleasant situation."

To place this situation in its true light we must point out certain facts. First, these basins would be used about 18-20 times a year if the plant was an 18 MGD plant. Their use prevents bypassing which is against Federal policy. The covered presedimentation basin would be the basin used 18-20 times a year according to the testimony by the NOrth Shore Sanitary District. That basin is covered. Tests have shown that the effluent received by this plant is positive in oxygen content which is a factor against odors. The effluent receives chlorine, is held 45 minutes by which time it was estimated that 90% of the solids had been settled out. The chlorine then can work better on bacteria, odor causing agents, and virus. It was estimated that if the plant was 18 MGD, the initial filling of the covered presedimentation basin would cause the retention basins to be used only 12-14 times a year. There would be two retention basins, each of 10 MGD capacity. The second basin would be needed only 2-4 times a year. If the flow is more than the capacity of the presedimentation basin it is first chlorinated and 90% of the solids are removed in that basin before the dilluted storm water goes to the retention basins. Provision is made for the effluent in the retention basin to be recirculated and rechlorinated to keep odors under control. The settling time and chlorination would kill bacteria and virus in the retention basin. The continuing recirculation and chlorination aids this. Immediately after use the retention basins (which are lined in cement) are cleaned. Heavy chlorination plus prompt cleaning would keep pests away though other methods could also be used if needed without the necessity of covering the basins. (Presently the untreated sewage flows from the plant causing odors and surprisingly not causing rat problems. This would be remedied by the new plant if it were large enough).

The system just described should keep odors down. The equipment is simple. All equipment is duplicated so if there is a malfunction the problem could be corrected. The plant is constantly manned and the odor would be detected. The recirculation facilities would enable correction. Add all this to the fact that the open retention basins would be in use 10-12 times a year and the likelihood of odor problems is almost impossible and subject to quick correction. It is not justification for spending up to 2-1/2 million dollars covering the Clavey retention basins and spending millions of dollars covering other retention basins.

As far as gases from the plant are concerned, Dr. Carnow indicated some worry which was quoted by the author of the draft statement. However, Dr. Carnow indicated that he was talking about general sewage plants and not talking about the specific engineering of the expanded Clavey plant. He stated that the sulphur emissions as stated in Dr. Quon's letter could be harmful. What he did not know was that due to Dr. Quon's recommendations the sulphur emissions would go through catalytic combustion which would sharply reduce any harmful emissions below levels which when combined with the levels in the air around the plant would be below the level to cause harm. Dr. Friedman, a witness for the Clavey neighbors, estimated that plant would emit gas equal to a seven room house burning high sulfur coal. Even that quantity is questionable as on the high side. Dr. Quon calculated other emissions (See p. 76 of the appendix to the draft) and if they are compared with the proposed federal emission standards, they will be found well below the harmful level. Other concerns of Dr. Carnow like iron particulate matter are many pathogenic viruses in sewage. But their presence does not cause disease. A method of transmission is not related to the retention basin by these articles (unless someone would drink that water which is not likely). The next article is by Martin Rogoff, PhD who we learned works principally in the area of soil microbiology. His comments on ground water supply are irrelevant since such is not used in the Clavey area. He also shows that sewage contains pathogens. He indicates that they can be transferred by aerosols and indeed this has been indicated in laboratories where a virus is transmitted by aerosols. But what process in the retention basin causes aerosols? There is no bubbling. Rogoff in his article attributes statements to Dr. Deinhardt which Dr. Deinhardt allegedly made in the Illinois Pollution Control hearing. If the author of the draft statement bothered to check the transcript of that hearing he would find that those statements were never made and, further, Rogoff's comments on immunization by aerosols are irrelevant. Next came Dr. Carnow's statements, but Dr. Carnow in the hearing before the Illinois Pollution Control Board stated that other than droplets, he did not know of methods of virsus transmission in the air. Dr. Carnow refers to transmission by aerosols in the appendix to the draft and again we do not have aerosol formation in the retention basin. Dr. Carnow on pages 204-5 of the appendix states he bases his ideas in this area from studies with a Dr. Lorenzo at Cook County Hospital. Dr. Lorenzo when contacted said that the studies involved what size aerosols were absorbed by the lung and had nothing to do in the air do not exist in harmful quantities in the Clavey residential area and do not cause harm since sulfur emissions have been cut down.

Regarding the fear of bacteria and virus going into the air from the retention basin, that fear is unfounded. It is only mentioned by the author of the draft statement because he did not bother to analyze what he was dealing with. That failure is terrible. The articles cited on page 109-216 are all irrelevant.

The abstracts cited do not deal with the problem at Clavey nor do the articles. The problem at Clavey deals with retention basins which do not have bubbles and which do not involve the trickeling filters. The Ledbetter article at page 119, deals with bacteria from bubbles in an activated sludge plant. When bubbles in that process collapse a verticle jet of water rises from what was the bottom of the bubble cavity. The jet becomes unstable and breaks into small drops which go into the air. The droplets may have bacteria in them from the water. However, at Clavey this happens in an enclosed room. It does not occur in the retention basins. Similarly, the "Science" magazine article at page 133 of the appendix to the draft says that water droplets thrown into the air by a trickling filter may have bacteria in the droplets and can be carried by the wind. Albrecht on page 112 of the appendix also dealt with trickling filters. But there is no trickling filter to throw water into the air from the retention basins at Clavey. The Vernon article on page 137 of the appendix and the Berg article on page 145 of the appendix merely show that there with pathogen transmission by aerosols. Dr. Carnow's testimony is generalized and is difficult to apply to the retention basins which are discussed in the draft. Dr. Carnow's statements on gas were discussed above. Dr. Carnow admitted in the proceeding before the Illinois Pollution Control Board that he did not know if the Clavey Plant would cause harm. It is terrible that the author of the draft statement causes a multimillion dollar expenditure based on these articles. He admits that he had no tests conducted. The matter he is dealing with is not new or unique. His use of these articles was very poor and unexcused.

The author of the Leagues comment has examined over 50 medical articles on transmission of bacteria and virus "by air". When the term "by air" is used, it refers to droplets or aerosols (also known as droplet nuclei) and sometimes dust. The Leagues' witness Dr. Deinhart, when he said that bacteria and virus was not carried by air meant literally that the gas in the air above would not transmit bacteria and virus. He did not mean that droplets or aerosols did not transmit virus. No tests have ever shown virus or bacteria transmission through the air unless it were carried by a water droplet, an aerosol or in certain cases dust. Droplets, because of their weight, do not travel far. Aerosols, because they are light, travel farther. It should be noted that the prominent British Medical magazine Lancet (1959, p 1196-1200) showed how germs carrying aerosols were set loose when one flushed a toilet. However, though such aerosols may carry germs doesn't mean that they will necessarily transmit them. That is being studied. Studies indicate that pathogens carried by water particles in the air have

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have a short average life span. Some illness including hoof and mouth disease have been traced to aerosols.

The main point here is that there is no mechanism such as bubbles to cause aerosols to be formed in the retention basins. A windbreak of trees and bushes could be used to alleviate fears that a strong wind could carry droplets. Wind blowing horizontally generally would cause almost no problems even without a wind break. There is no dust because of immediate cleaning after use and Dr. Carnow at page 652 of the hearing before the Illinois Pollution Board said such cleaning would stop problems. It must also be realized that the water we are talking about is chlorinated, it has had settling time, it is diluted and 90% of the solids have been settled out so chlorination should be effective against bacteria and viruses. So besides the fact that articles indicate that there is no proof or indication that bacteria or virus merely leave water on their own and go into the air or are transmitted by gases from evaporation, the chlorine in the water we are dealing with should have killed most virus and bacteria. When you add to these factors the slight use of the retention basin, you should not have a requirement that millions of dollars should be spent covering the retention basin. Heavier chlorination might be required.

Again the Clavey plant is not unique (see attached pictures of Hanover Park). The people around the Clavey Plant are better protected than most plants. The author of the draft statement did not question the effluent lagoon for water with secondary treatment. That will be closed and is temporary to add further reduction of BOD. With the degree of treatment the water should be fairly clean since activated sludge treatment removes up to 95 of virus. The bubbles here according to testimony before the Pollution Control Board are 1/64 of an inch large. These are too small to cause problems of particles going into the air.

POOR PLANNING CAUSED THE RECOMMENDED PLANT ON THE DES PLAINES RIVER BE BUILT AS SOON POSSIBLE

The recommendation that an 18 MGD plant be built on the Des Plaines River was based on a guess and not on real planning. No attempt was made to find out if there were available sites and if people would not tie up that plant with court suits. Meanwhile, too small a plant is recommended for Clavey.

Further, the author of the draft did not consider other sewage plants on the Des Plaines River. As was pointed out by both the United States Department of Commerce and the United States Department of Agriculture on pages 86 and 93 of the Appendix, there are some flooding problems on the Des Plaines River. The author of the draft statement ignores this and ignores the concepts of basin and regional planning. The Gurnee and Waukegan Plants will add 30 MGD to the Des Plaines. The O'Hare plant and the Salt Creek Plant of the Chicago Metropolitan Sanitary District will add 78 MGD to that stream. Can that river afford the 18 MGD plant that is proposed in the draft statement? Shouldn't we wait to see how those plants affect the river? Should the 6 MGD be taken from Clavey to the Des Plaines River when other areas on the Des Plaines River may need that capacity whereas the North Shore Sanitary District is the only

District really using the Skokie River? These vital questions were ignored by the author of the draft statement.

That author also ignores the fact that by immediately building a plant not needed till 1980, one looses out on gaining technological advances made during the next five to eight years. Possible better methods of treatment will be sacrificed. Many technology breakthroughs are on the threshold. Uinox would enable a smaller plant to be built in the future. The Army Corps of Engineers is working on a diversion system where water would be pumped 100 miles away to a rural area. It would be used to recharge the ground with phosphates and nitrates, it then would be filtered through sand, filtering out viruses and it would recharge the ground water. Denitrofication, ammonia stripping, columner nitrate reduction, the biodize system, reverse osmosis, ion exchange, electrodialysis, clarification absorbtions, use of organic polymers, ultra filtration, phosphate removal and many many more new and exciting processes are being developed with FWQA aid. Should these be foresaken by building a plant before it is needed?

The project cost estimate for the Clavey Plant with tertiary treatment at 18 MGD including an inflation factor through construction is $19,046,000. These costs were filed with the Illinois Pollution Control Board and included tertiary treatment. The North Shore Sanitary District should not have to spend $54,420.00 instead for a project that could cause flooding,would forsake future technology, is not needed and which may not be proper in light of new additions to the North Shore Sanitary District or mergers between sanitary districts which could occur in the next five years.

CONCLUSION

The original plan for Clavey Road has the approval of all local Leagues of Women Voters in the NOrth Shore area except the Highland Park LEague which neither supports nor opposes it. Many environmental groups also favor this position. The position taken in the draft statement ignores the desires of these groups. It was written in close contact with the Clavey Road residents without consulting other interested citizen groups. The League of Women Voters was told the plan only after it had been tentatively agreed on and only after the League confronted its author. We are dealing here with the rights of thousands of residents along Lake Michigan shore who use the lake and the Skokie Lagoons. Their interests must be protected.

We favor only an 18 MGD plant at Clavey Road as was originally planned with a 20 MGD retention basin which is not covered. The facts do not require otherwise.

Respectfully,

Richard M. Kates
Attorney for the League of Women
Voters of the State of Illinois

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May 25, 1971

Mr. Francis T. Mayo
United States of America
Environmental Protection Agency
Region V
Water Quality Office
33 East Congress Parkway
Chicago, Illinois 60605

Dear Mr. Mayo:

Pursuant to the authority contained in the attached letter sent by your acting regional director giving the League through May 25, 1971 to submit comments to your office on the North Shore Draft Environmental Statement, we hereby request and require that the enclosed Appendix be attached to our comments which were delivered to your office on May 24, 1971. This letter is being hand delivered to you on May 25, 1971.

This Appendix is also being attached to the comments of the League of Women Voters of the State of Illinois which are being delivered by the request of certain other interested persons and officials. If the time period is open for any citizen's group, please inform us because we may wish to use any such opening. We do believe that the record is closed.

A copy of this letter with the original photographs is being sent directly to Mr. Schenzel. Please excuse the high degree of formality which I am using in this matter. It is no reflection on any member of your staff. It is merely an attorney's caution.

Sincerely,

Richard M. Kates

RMK:sm
Enclosure

cc: Mr. Schenzel

APPENDIX A

DR. DEINHARDT

The purpose of this paragraph is to state some of the qualifications of Dr. Deinhardt, who served as the League's witness and advisor regarding methods of transmission of bacteria and virus. Dr. Deinhardt holds a Doctor of Medicine Degree (Summa Cum Laude); he is the Chairman of and Professor in the Department of Microbiology of the University of Illinois Graduate Schools and Medical Schools; Chairman of the Department of Microbiology at the massive and nationally known Rush Presbyterian St Luke's Medical Center complex in Chicago, Illinois; consultant to the Board of Health of the City of Chicago; member of the U.S. Surgeon General's Advisory Committee on general medicine; special consultant, National Institute of Health; associate member Commission on Viral Infections, United States Armed Forces Epidemiological Board. He has published more than 50 articles in nationally known medical and scientific journals including the Journal of Imunology, the American Medical Associate Archives of Internal Medicine, the Journal of Virology, the Journal of Experimental Medicine and the American Journal of Hygiene.

THE ATTACHED PICTURES

The attached pictures are of the Hanover Plant of the Chicago Metropolitan Sanitary District. They were sent by that district in answer to a request of the League of Women Voters of the State of Illinois for pictures of one of their waste treatment plants which was located in a residential area. It is our understanding that the President of the United States has visited that plant as an example of an updated treatment plant. The covering on the North Shore Sanitary District Plant is more complete than that on the Hanover Plant. There is no indication of any disease in the area of the Hanover Plant which was caused by the plant. If you will examine the pictures, you will note that there is a school immediately next to plant facilities and there is a walk through the open facilities of the plant to that school. The close proximity of the children to the plant has lead to no noticeable disease problems. This plant is smaller than the proposed North Shore Plant, but its proximity to the children is exceedingly closer.

Technical and Engineering Comments
by
Lake Michigan Protectors of the Environment, Inc.
(formerly Committee to Save Highland Park)

On The

Draft Environment Impact Statement

for

Sewage Project No. WPC-Ill.-754
North Shore Sanitary District
Eastern Lake County, Illinois

Released by

Federal Environmental Protection Agency
Water Quality Office
Great Lakes Region

April 23, 1971

Amos Turner

Amos Turner
Registered Professional Engineer
Illinois License No. 19471
May 21, 1971

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ABBREVIATIONS

FWQO	Federal Water Quality Office
G & H	Greeley and Hansen Engineers
GPD	Gallons per Day
HP	Highland Park
I 94	Interstate 94
IPCB	Illinois Pollution Control Board
INT	Interceptor (Gravity)
LMPotE	Lake Michigan Protectors of the Environment, Inc. (formerly Committee to Save Highland Park,)
MG	Million Gallons
MGD	Million Gallons per Day
MSD	Metropolitan Sanitary District of Greater Chicago
NIPC	North - eastern Illinois Planning Commission
NSSD	North Shore Sanitary District
REC	Recommendations
STP	Sewage Treatment Plant

1.0 Introduction

1.1 General

The Federal Water Quality Office (FWQO) Great Lakes Region has conducted an Environmental Impact Study of the proposed expansion of Sewage Treatment Facilities in Eastern Lake County. The study was conducted in conformance with the National Environmental Act of 1969, Public Law 91-190 which includes the following statement:

> "..It is the continuing responsibility of the Federal Government to use all practicable means....to the end that the Nation may-... (2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.."

The study was conducted in accordance with Interim Guidelines prepared by the Council on Environmental Quality. FWQO reviewed data and comments submitted by the LMPotE, NSSD and a number of Federal and State agencies. Public objections to the proposed expansion from the clergy, groups of doctors and other civic groups were considered.

The study considered environmental effects and alternates to the proposed action. The preliminary "Draft Environmental Impact Statement" was released on April 23, 1971. Section No. 2.0 through 2.10 of this report contains LMPotE technical, engineering evaluation and comments. Section No. 3 contains conclusions.

1.2 Present Expansion Program

In 1967 the NSSD and G & H conducted a number of studies concerning expansion of sewage treatment facilities in eastern Lake County. Although an existing 4.5 MGD plant at Clavey Road has been emitting odors, air pollutants and possible germs and viruses into an immediately adjacent residential area, an alternative to Clavey was never considered. G & H concluded their studies and recommended the quadrupling of the Clavey Plant (from 4.5 MGD to 18 MGD), and building at Clavey an open, approximately 6 acre, retention basin and an open, approximately 6 acre, effluent lagoon. Other recommendations included a new plant within the corporate limits of the Village of Gurnee, (the plant was subsequently moved into an unincorporated area because of objections of local residents) and expansion of facilities at Waukegan, North Chicago and Highwood. A $35,000,000 bond referendum presented to and passed by the voters mentioned, in general, the proposed expansion and the new facilities, but did not offer any details.

A number of court cases were instituted by LMPotE of which (2) two have been supported by School Board 108, as the children attending 108 schools live and study in the immediate vicinity of the Clavey Road Plant. District 108 also owns property near the plant. The outcome of the different court cases was the covering of the primary, aeration and final tanks and the presidementation portion of the retention basin and the prevention of emission and monitoring of air pollutants. A subsequent agreement between the City of Highland Park and the North Shore Sanitary District limits the size of the Clavey Plant to 18 MGD, with the provision that the District will not aquire any additional land in Highland Park and will not build another plant in Highland Park, A number of cases are still pending in courts, effectively preventing the district from committing funds beyond the $8,800,000 committed up to now.

Most of the commitments by the NSSD until the present time have been made for facilities at Clavey and/or leading to Clavey, to establish a "Fait Accompli" and to force the enlarged facility upon the residents. Construction should have been started at Gurnee, Waukegan, and North Chicago, where there was no controversy and no objections and where the NSSD could have built without danger of being overruled by a court with jurisdiction.

IPCB held hearings on the proposed expansion as a result of a complaint by the League of Women Voters of Illinois (except the League of Women Voters of Highland Park who did not take a stand on the Clavey Road controversy) and complaints from a number of Highland Park residents. The board issued its, "final" order on March 31, 1971 basically reaffirming the planned expansion by the NSSD with the following exceptions:

a. NSSD was ordered (IPCB Item No. 3) to issue $50,000,000 General Revenue bonds, and if required, $85,000,000. This portion of the order is being appealed by NSSD, who claims that it is unconstitutional. The issuance of General Obligation Bonds is unfair to taxpayers in eastern Lake County who voted for the 1968 $35,000,000 bond referendum, in the belief that additional matching funds, will be available from State and Federal Agencies. It is unfair to impose an additional burden upon the average taxpayer, just because IPCB takes objection to the FWQO recommendations, which would benefit all and hurt no one.

b. NSSD was ordered (IPCB order Item No. 7) **not** to permit new sewer connections to overloaded facilities, thus effectively bringing all construction in the area to a grinding halt. This part of the order is being appealed by the Lake County Builders Assn,& Lake County Constructors Assn. A review was asked for by the Waukegan - North Chicago Chamber of Commerce, Zion - Benton Chamber of Commerce and Lake County Building Trades Council. The plaintiffs claim that they were not part of the proceedings and that "work stoppage caused by item 7 of IPCB order would result in wide spread unemployment of construction industry related labor in the NSSD boundries, cause financial ruin and bankruptcy of a great number of individuals and corporations engaged in the construction industry cause financial ruin and bankruptcy of a substantial number of individuals & corp. who have invested in property to be developed &

have subjected themselves to binding contractual commitments relating thereto, all to the vast economic detriment of persons residing within the NSSD".

c. Clavey Road Plant shall discharge the effluent into the Skokie ditch and not into the Des Plaines river, thus requiring an Advanced treatment plant. On August 20, 1970 or 9 months ago LMPotE had asked not to issue a building permit for the Effluent Lagoon because it would not meet State standards for discharge into the Skokie ditch. Our request was disregarded and construction started. NSSD has estimated that it has spent about $300,000 on the lagoon through April, 1971. NSSD would not commit itself to a phaseout of the lagoon. as soon as the Advanced plant goes into operation. The City Council of HP has requested the discontinuance of the construction of the Effluent Lagoon and asked its consultant Mr. Vinton Bacon to prepare an engineering report to show that the lagoon is not needed.

d. The individual complainants, except the League of Women Voters of Illinois, were ordered by the board (IPCB order item no. 8) to "cease and desist from prosecuting any further actions", except to appeal the IPCB order. In the opinion of the writer this part of the order, is unconstitutional, because it deprives the claimants of their basic rights to seek justice in courts of law as assured by the Bill of Rights of the Constitution of the United States.

The following facts which came to light at an IPCB hearing 30 days after IPCB "final" order, on April 29 and 30, 1971 are of particular interest.

a. IPCB did not admit the FWQO Draft Environmental Impact Statement into evidence because the "FWQO Statement disagreed with the IPCB order." Another formal request has been made by LMPotE and is being considered by IPCB.

b. IPCB did not admit additional medical data and data on health hazards, submitted prior to IPCB order.

c. After admission by G & H that Clavey Plant, if expanded in accordance with IPCB order to 18 MGD, would be overloaded by 1980, the IPCB did not allow a discussion on remedial actions. Specifically IPCB did not allow a discussion of Alternate Sites, of a need to build another plant elsewhere and to reroute the Middle Fork Intercepter, now estimated at $10,200,000.

d. The IPCB did not allow a discussion on covering the retention basin.

e. The IPCB did not allow into evidence a letter from the Mayor of HP requesting stopping of the construction of the Effluent Lagoon.

f. G & H admitted under cross examination that there will be monitoring of H_2S, SO_2 and Chlorine Gas, but not of other pollutants, as has been ordered by a circuit court. The IPCB did not order the district to monitor other pollutants.

g. The total program, including diversion of the Lake Front Plants, was estimated by G & H in June, 1968 at $9,830,000 (see Application to NIPC, project 068). The Program was estimated by Greeley & Hansen on April 28, 1971 $95,270,000 or approximately ten (10) times as much. And at Clavey, the program provides for 1980 needs and not for 1990 needs as contemplated all the time.

LMPotE and/or the individual claimants have appealed the IPCB order because of the reasons described in the above paragraphs a-g above & d of the preceeding paragraph and other facts too numerous to mention.

2.0 Recommendations

The specific recommendations contained on pages 37 and 38 of the FWQO "draft" have gone a long way to satisfy the letter, spirit and intent of section 101 of the National Environmental Policy Act of 1969, namely, assuring the residents in the immediate area of the plant... "safe, healthful, productive and esthetically and culturally pleasing surroundings". We commend the FWQO for an objective and unbiased study and evaluation of a complex problem, and for the specific recommendations, which increase the degree of safety established by State Environmental agencies, by State Courts, by NSSD and G & H. None of the suggestions, and comments contained herein should be misconstrued by anyone, as opposing or disapproving the basic intent of the FWQO, in providing maximum safety and protection to the people and to the environment, commensurate with cost considerations.

In order that the people living near Lake Michigan are assured of the high quality of the water that they drink and swim in, and that the Sewer Connection ban is lifted, securing employment and preventing hardships to thousands of families in eastern Lake County, the expansion and/or the construction of new sewage treatment facilities in the NSSD district should proceed, but with the following exceptions.

2.1 Additional Stormwater Retention (FWQO Rec. it.No. 1a)

G & H admitted at IPCB hearing on April 29 and 30, 1971 that overflows of raw sewage into Lake Michigan will continue. FWQO recommendation, item 1a, to provide additional stormwater retention at Waukegan, North Chicago, and the lakeside pumping stations, if properly sized, would eliminate any discharges of raw sewage into the lake.

The location of retention basins at the lakeside pumping station is preferred because most of the infiltration of stormwater into the sanitary system occurs in the older, lakeside, portions of North Shore cities. Pumping stations would not have to be sized for transient flow but for steady state, dry flow, conditions. The savings in cost could be used to provide maximum safety. The basins could be either underground or covered, with proper ventilating and air pollution control devices and proper landscaping.

If a retention basin is located at the Cary Avenue pumping station, the retention basin at Clavey Road could be eliminated or reduced to a maximum 5 MG size.

2.2 Size of the Clavey Road Plant (FWQO Rec. Item No. 1b)

This item has become the single most controversial issue. Some people and groups, living away from either Clavey Road or Highland Park have objected to a reduction of the Clavey Road Plant because of misinformation and erroneous assumptions.

The facts are as follows:

> The reduction of the Clavey Road Plant would not delay the diversion of the Lake front plants, if anything it will speed it up.
>
> NSSD construction schedule of April 28, 1971 indicates Summer of 1973 as the earliest possible date when the following portions of the project will be completed.
>
> 1. Lake front intercepting sewers
> 2. Additional treatment facilities at Clavey Road
> 3. North Chicago Plant additions
> 4. Waukegan additional treatment facilities
> 5. Middle Fork Sewer
> 6. Gurnee - secondary facilities (November 1, 1973)

The projected completion date of engineering for additional treatment facilities at Clavey Road is July 1, 1971. The reduction in size of the facilities should result in less time required to complete drawings and specifications. An allowance of 4 months for bids and award of the contract could be reduced to 2 months. The construction of a reduced (in size) facility would not have to take 21 months but could be shortened almost in proportion to the reduction in size.

The IPCB order is being appealed by the NSSD, the Lake County Builders Assn, and the Lake County Constructors Assn, and LMPotE. A review was asked for by the Waukegan - North Chicago Chamber of Commerce, Zion - Benton Chamber of Commerce and Lake County Building Trades Council. The issuance of the $26,200,000 ($35,000,000 less $8,800,000) is being held up because of pending litigation. NSSD has not obtained all easements required for the Lake front Intercepting Sewer.

The diversion of the lake front plants will not take place by July 1, 1972 and as it was shown in the preceeding paragraph, it may not even take place in the Summer of 1973.

In order that the diversion does take place at the earliest possible date, the final FWQO recommendations will have to be accepted by NSSD and LMPotE. When and if this happens, all litigation byLMPotE will be dropped and a spirit of co-operation established, which may influence the other interested parties to drop their litigation.

FWQO statement that "the plant (Clavey Road) is nowin an unfavorable setting" backs up the convictions and arguements of LMPotE, which were made years ago, when there was still time to take corrective measures to build another plant in a more suitable location and ultimately phaseout the Clavey Road plant. LMPotE seriously questions whether the well being of the people living in the area of the Clavey Road plant should be jeopardized, whether the people should be exposed to potential health hazards and whether irretrievable ecological damage should take place at Clavey, just because the trustees of NSSD have steadfastly refused to listen to reason. If it **is** now too late to abandon the Clavey Road Plant altogether, then at least it should be kept to an absolute minimum, so that it could be phased out at some future date.

Recognizing the present need to divert the lake front plants and having a concern for all people living on adjacent lands to Lake Michigan and trying to prevent hardships to thousands of workers and their families and to builders in eastern Lake County, LMPotE agrees in principle to expand the Clavey Road plant provided that the "latest State of the Art is assured" and that the plant is kept to the smallest possible size.

The Clavey Road Plant is serving areas extending to Grand Avenue in Waukegan and including Gurnee, Park City and North Chicago. The average flow is 6 MGD or less. G & H testified in front of the IPCB that average flow of the 5 lake front plants is 4 MGD. The diversion of the lake front plants to Clavey, as was shown above, can not take place prior to operation of the secondary facilities at Gurnee. Thus diversion of sewage from the Village of Gurnee, Park City and North Chicago, north of 12th Street to Gurnee S.T.P. will reduce the flow to Clavey by at least 2 MGD. Now that there is a ban on new sewer connections, an increase in MGD in the area is not expected until 1974, when the expansion project is completed.

Until 1974, when the Des Plaines plant could go into operation Clavey would have to handle the following flows:

Present	6MGD
Less Gurnee, Park City parts of North Chicago	2MGD
Subtotal	4MGD
Plus flow from 5 lake front plants	4MGD
Total	8MGD

The effective ability of an Activated Sludge Plant to treat sewage could be increased by 30 to 40% by the use of commercially available Coagulant Chemicals, in primary and final tanks, without a loss in efficiency, as long as sludge handling facilities are adequate or the sludge hauled away.

Using the conservative 30% figure, the present 4.5MGD Clavey S.T.P. could handle 6MGD, by the use of Coagulant Chemicals, by September 1, 1971 when the additional sludge handling facility is scheduled for completion. A 6MGD STP could handle up to 8 MGD, which is the projected flow at Clavey by 1974.

The projected population of Highland Park and Highwood in year 2000 will be about 60,000. Allowing 150 gallons per day per person, the size of the Clavey Road STP, unless it is phased out by then, would have to have a capacity of 9MGD. Handling Highland Park and Highwood, would correspond to a 1947 Official City Plan of H.P..

Summarizing, Clavey should be expended to 6MGD, and coagulant chemicals should be used when needed. The plant should be phased out, at some future date, because it is incompatible with the area. If for some reason, the Clavey Road plant is not phased out, then an increase to 9MGD would have to take place in the early 1980's.

2.3 New, 18MGD Plant on the Des Plaines River (FWQO Rec. It.No. 2)

The Des Plaines River location has been considered for a STP by Lake County Regional Planning Commission in their long range plan. The specific site considered is probably located between Milwaukee Avenue and the Des Plaines River near a Sanitary landfill area. The area is devoid of homes and residences and the environmental impact is negligible in comparison to Clavey Road.

Should the NSSD trustees object to this location because it is outside their district, then they will have to come up with an equivalent area somewhere in the southwestern portion of the district.

2.4 Retention Basin at Clavey Road (FWQO Rec. Item No. 1b)

As it was shown above, the stormwater retention basin at Clavey Road should not exceed 5 million gallons capacity. It should be completely covered or built underground, be provided with the most advanced control equipment to eliminate air pollutants and odors and possible viruses, germs and air borne infections, be located far away from Clavey Road and from residences and be completely obscured by landscaping. The presidementation portion of the covered basin could be disposed of, if some means of agitation are provided.

2.5 Environmental damage during construction (FWQO Rec. Item No. 3)

The restoration of disrupted areas during and because of construction may be an impossible task as many of the trees removed were very old. It will take many years for new trees to replace the old ones, particularly in the area of the Village of the Woods, where numerous trees and other vegetation was removed to make space for the Effluent Lagoon.

FWQO recommendation to limit environmental damage during construction and to restore disrupted areas to their former condition is highly commendable and should be complied with.

2.6 Effluent Lagoon

The history of the Effluent Lagoon was described above. We know now that construction of the Lagoon should have never taken place. Environmental, ecological damage to the area of the Village of the Woods could have been avoided and the taxpayers would have saved $300,000 to $400,000.

The lagoon would provide some additional treatment, to the present secondary Effluent. The Lagoon could not increase the capacity of the plant, nor can it be used as a retention basin. It's effect on the quality of water in the Skokie ditch would be very limited, as most of the damage is done by raw sewage overflows, after and during rainfalls, and not by the quality of the secondary effluent.

Effluent lagoons are used in areas where land values are very low. In accordance with established 10 State standards, they should be located far away from habitation.

The decision to use the Lagoon at Clavey was based on economic considerations as the effluent lagoon and forced main to the Des Plaines River were less expensive than a tertiary plant at Clavey. (For references see G & H Studies in 1967).

An advanced treatment facility will be built at Clavey. It could become operative not on November 1, 1974 as shown on NSSD schedule of 4/28/71 but sometime in 1973, as will be shown in an engineering report to be prepared by Mr. Vinton Bacon for the City of H.P..

Rather than to spent additional $300,000 to $500,000 of taxpayers money for a facility considered interim by the IPCB, a much smaller investment in coagulant chemicals would considerable improve the efficiency of the presently overloaded plant. The result would be an effluent of much higher quality at a lower cost.

LMPotE demands, that the construction of the Effluent Lagoon is stopped immediately and that the area is restored, as close as possible, to it's original condition, thus providing a natural buffer zone for the homes and people in the Village of the Woods subdivision, now located across the road from the lagoon.

2.7 Chlorine Handling

Chlorine Institute's pamphlet on "Facilities and Operating Procedures for Chlorine Storage" states in P. 2.1 General Area, "Where practical, tanks should be located away from densely occupies areas." As chlorine gas is poisonous and the chlorine ton cylinders would be located outdoors about 150 feet away from homes, the use of Sodium Hypochlorite in lieu of liquid chlorine is imperative. Dr. Quon, consultant to the City of H.P. recommended the use of sodium hypochlorite at his first meeting with the City fathers July 7, 1970. MSD is using sodium hypochlorite solution at all of its plants. NSSD is using it at the 5 lake front plants. The City of Chicago does not allow chlorine within 1/8 of a mile of homes. The Building Officials Conference of America Basic Fire Prevention Code, adopted by the City of HP by ordinance requires a 1 hour fireproof building for storage of chlorine.

Summarizing, the use of Sodium Hypochlorite is imperative in lieu of liquid chlorine.

2.8 Landscaping (FWQO Rec. Item No. 4)

Landscaping should be done in a manner that it will completely obscure the facility from residences, churches and pedestrian and cars travelling on Clavey and Lake Cook Roads. The FWQO recommendation is commended highly.

2.9 Study of environmental consequences, of diversion of water from one watershed to another (FWQO Rec. Item No. 5a).

This study will be of tremendous importance to conservationists concerned with possible upsetting of the laws of nature by not returning water to the watershed from where the water originated.

The decision to divert all flow of sanitary and industrial wastes away from Lake Michigan and possible future requirements to divert land runnoffs from the lake was made to stop the eutriphication of the Lake. The long range effects of diversion into the rivers emptying in the Gulf of Mexico could be detrimental. As soon as the eutriphication of the Lake has been stopped and reversed and once the effect of different substances on the lake and its aquatic life are known and are controlled, or found not detrimental, a decision may be reached to redivert the flow into Lake Michigan. A FWQO study of the problem is commended highly.

2.10 Study including monitoring of Air Pollutants, Germs, Viruses and possibility of air borne infection (FWQO Item No. 5b)

Although monitoring is not specifically mentioned in FWQO recommendation, LMPotE assumes that monitoring, alarm and recording will be made of air pollutants, viruses, and germs.

G & H testifying in front of IPCB on April 29 & 30, 1971 admitted that the only pollutants that will be monitored will be: Hydrogen sulphide (H_2S), Sulphur Dioxide (SO_2) and chlorine gas.

If monitoring is to be of value, then it should be complete, and both inside and around th plant.

The pollutants to be monitored should include H_2S, mercaptans, carbon disulfide, SO_2, SO_3, Sulfuric acid, NO_2, bacteria and viruses. Monitoring the mercaptans in addition to hydrogen sulfide is essential, since they are organic sulfur compounds with odor thresholds of approximately 100 times lower than hydrogen sulfide. Therefore, hydrogen sulfide readings could be low and yet the area could be experiencing odors due to the mercaptans and carbon disulfide. The latter two would be undetected with the presently planned monitoring system. The nitrogen oxides should also be monitored since nitrogen compounds are formed in the digestors. These compounds can be oxidized by combustion to nitrogen oxides which would be emitted to the atmosphere.

The above comprehensive study, the first of its kind will benefit not only Highland Park residents, but all mankind.

135

3.0 Conclusion

The two (2) principal parties in conflict NSSD and LMPotE have to resolve their differences so that Sewage Treatment facilities in eastern Lake County, Illinois are built and/or expanded, at an earliest possible moment.

The conflict can be resolved either by litigation in State and Federal courts for a number of years, or by a reasonable agreement, sanctioned by Federal and State Environmental agencies and Courts.

LMPotE prime concern is the well being of the greatest number of people, and the protection of human and constitutional rights of the people involved.

The FWQO Final Environmental Impact Statement, if modified as recommended in Paragraph 2.0 through Paragraph 2.10 will provide a reasonable base for an agreement and will be directly responsible for resolving a very complex problem, for the benefit of the people.

360 Charal Lane
Highland Park, Illinois 60035

May 24, 1971

Mr. Gary Schenzel
Water Resources Planner
Planning Branch
Environmental Protection Agency
Water Quality Office
Room 410
33 West Congress Parkway
Chicago, Illinois 60605

RE: Technical & Engineering Comments
on the Draft Environmental Statement
Sewage Project No. WPC-Ill.- 754
North Shore Sanitary District

Dear Mr. Schenzel:

Enclosed please find 3 (three) copies of our technical and engineering comments on your preliminary statement, which was released April 23, 1971. We commend highly your efforts to satisfy the letter, spirit and intent of section 101, of the National Environmental Policy Act of 1969. Our comments and suggestions should not be misconstrued as opposing or disapproving your basic intent to provide maximum safety and protection to the people and to the environment.

We trust that you will adopt our comments and suggestions, so that your final draft, complying fully with the 1969 Environmental Act, will provide a base to resolve this complex issue to the benefit of the people.

For your reference, we are enclosing copies of resolutions passed by the following Civic and Environmental groups, which will be directly affected by your final recommendations.

1. Committee to Save Highland Park (Now Lake Michigan Protectors of the Environment) representing over 300 families.
2. Environmental Control Commission of Highland Park
3. Board of Education School District 108 of Highland Park
4. Deere Park Neighborhood Association of Highland Park

5. (CAP) Campaign Anti-Pollution of Chicago, Ill.

6. (SAVE) Society Against Violence to the Environment, Chicago. and North Shore

7. North Shore Radiologists, S.C., Evanston, Illinois

The Clergy of Highland Park and Highwood and other local Civic groups will be contacting you directly. Under separate cover you will receive our group's comments including concern for a health study, which should take place prior to release of a final statement.

We pray that your final recommendations, provide the maximum safety to the people and to the environment in the area.

Sincerely yours,

Amos Turner

Amos Turner, P.E.
Director
Lake Michigan Protectors of the Environment

AT:pk

cc: Hon. Senator C. H. Percy
Hon. Senator A. E. Stevenson, III
Hon. Governor R. B. Ogilvie
Hon. Lt. Gov. P. Simon
Hon. Atty General W. Scott
Hon. Congressman R. McClory
Hon. K. Berning
Hon. J. H. Kleine
Hon. G. W. Lindberg
Hon. D. M. Pierce
Hon. R. R. Coles
Hon. R. J. Geraci
Messrs: W. Ruckelshaus, D. Dominick, A. J. Barnes, F. T. Mayo, W. Blaser, R. J. Kissel, M. Schneiderman, J. V. Karaganis
Drs: D. P. Currie, F. D. Yoder, J. F. Pfeffer

To: Mr. Gary Schenzel -- Federal Water Quality Office
33 East Congress Parkway
Chicago, Illinois

We being members of the Committee to Save Highland Park (Persons who are immediately affected by the enviromental impact of the Clavey Road Sewage Treatment Plant) do hereby state the following:

"We have waited so long for truly a objective study of the Clavey Road Sewage Treatment Plant in Highland Park, Illinois, embracing a grand view of the Great Lakes Water Quality Control Problems. We commend your preliminary draft and urge you to protect its scientific findings against local political greed and mis-information. We beg your office to make the best decision on our behalf and protect our HEALTH, WELFARE, AND HAPPINESS AS HUMAN BEINGS DIRECTLY AFFECTED BY YOUR FINAL DECISION.

Mr. and Mrs. Stanley Bresler	162 Hastings
Mr. and Mrs. Sheldon Rackman	176 Hastings
Mr. and Mrs. Sheldon Benn	230 Hastings
Mr. and Mrs. Sam Possov	240 Hastings
Mr. and Mrs. Arthur Salk	250 Hastings
Mr. lnd Mrs. Alan Edelson	263 Hastings
Mr. and Mrs. Heyman(Jerome)	264 Hastings
Mr. and Mrs. Albert Rosen	274 Hastings
Mr. and Mrs. John R. Hess	280 Hastings
Mr. and Mrs. Earl Linck	284 Hastings
Mr. and Mrs. Meyer Schwachman	286 Hastings
Mr. 1nd Mrs. Sidney Shapiro	288 Hastings
Dr. and Mrs. Ronald Nierenberg	289 Hastings
Mr. and Mrs. Robert Don	290 Hastings
Mr. and Mrs. Malcolm Nachbar	292 Hastings
Mr. and Mrs. Jay Caplan	294 Hastings
Mr. and Mrs. Lester Brower	295 Hastings
Mr. and Mrs. Jerome Kiefus	296 Hastings
Dr. and Mrs. Jerald Miller	298 Hastings
Mr. and Mrs. Robert Hirsch	299 Hastings
Mr. and Mrs. Herbert Leviton	301 Hastings
Mr. and Mrs. Paul Brown	303 Hastings
Mr. and Mrs. Arthur Rosenstein	309 Hastings
Mr. and Mrs. Kirsch	310 Hastings
Mr. and Mrs. Joseph Stone	319 Hastings
Mr. and Mrs. Herbert Scheonbrod	325 Hastings
Mr. and Mrs. Maynard Rowe	330 Hastings
Mr. and Mrs. Alex Pollak	343 Hastings
Mr. land Mrs. Richard Lewis	344 Hastings
Mr. and Mrs. Bruce Blumenthal	355 Hastings
Mr. and Mrs. William Cain	358 Hastings
Mr. and Mrs. Joseph Rubin	367 Hastings
Mr. and Mrs. Herbert Loeb III	370 Hastings
Mr. and Mrs. Jerrold Facktor	383 Hastings
Mr. and Mrs. Michael Cigelnik	384 Hastings
Dr. and Mrs. Morton Simons	766 Timber Hill
Dr. and Mrs. Sheldon Berger	774 Timber Hill
Mr. and Mrs. Henry Newman	792 Timber Hill
Dr. and Mrs. Sidney Peskin	785 Timber Hill
Dr. and Mrs. Robert Zelekow	790 Timber Hill
Dr. and Mrs. William Meltzer	798 Timber Hill
Dr. and Mrs. Kraft	801 Timber Hill
Mr. and Mrs. Richard Levin	806 Timber Hill
Mr. and Mrs. Edward Soifer	809 Timber Hill
Mr. and Mrs. Gilbert Cone	814 Timber Hill
Dr. and Mrs. Raymond Jacobs	817 Timber Hill
Mr. and Mrs. Marvin Jacobson	827 Timber Hill

Mr. and Mrs. Sanfred Kolten	[illegible] Timber Hill
Mr. and Mrs. Milton Pearlman	[illegible] Timber Hill
Mr. and Mrs. [illegible]	[illegible] Hill
Mr. and Mrs. Joseph [illegible]	[illegible] Timber Hill
Mr. and Mrs. Howard [illegible]	[illegible] Hill
Mr. and Mrs. Warren Keller	[illegible]1 Timber Hill
Mr. and Mrs. Donald Gol[illegible]	[illegible] Timber Hill
Mr. and Mrs. Reuben Shore	[illegible]54 Timber Hill
Mr. and Mrs. Morton [illegible]	[illegible]1 Timber Hill
Mr. and Mrs. Sheldon [illegible]	[illegible] Timber Hill
Mr. and Mrs. Sheldon Abrams	[illegible] Timber Hill
Mr. and Mrs. Ronald Cigelnik	87[illegible] Timber Hill
Mr. and Mrs. Mark Metzner	[illegible] Timber Hill
Mr. and Mrs. Richard Haleban	[illegible]7 Timber Hill
Mr. and Mrs. Laurence Pearlstein	879 Timber Hill
Mr. and Mrs. Ronald Tomsky	879 Timber Hill
Mr. and Mrs. Sanford Sevey	[illegible] Timber Hill
Mr. land Mrs. Bernard Schneider	[illegible] Timber Hill
Mr. and Mrs. Jarrard Millan	887 Timber Hill
Mr. land Mrs. Sheldon Berk	88[illegible] Timber Hill
Mr. and Mrs. Robert Kupchik	89[illegible] Timber Hill
Mr. and Mrs. Bruce Kublick	899 Timber Hill
Mr. and Mrs. Earnest Schwartz	902 Timber Hill
Mr. and Mrs. Robert Simon	910 Timber Hill
Mr. and Mrs. George Berliant	913 Timber Hill
Mr. and Mrs. James Hoffman	918 Timber Hill
Mr. Donald Mellon	921 Timber Hill
Mr. land Mrs. Albert Sapir	926 Timber Hill
Mr. land Mrs. Joseph Frazin	934 Timber Hill
Mr. and Mrs. Norman Chase	937 Timber Hill
Mr. and Mrs. Howard Franklin	942 Timber Hill
Mr. and Mrs. Ben Migdow	945 Timber Hill
Mr. and Mrs. Barry Shuman	950 Timber Hill
Mr. and Mrs. Louis Tannenbaum	246 Larkspur
Mr. and Mrs. Robert Coe	266
Mr. and Mrs. Morton Weiner	267
Mr. and Mrs. Robert Rose	275
Mr. and Mrs. George Bernstein	306
Mr. and Mrs. Dobkin	310
Mr. and Mrs. Lowell Fixler	311
Mr. and Mrs. Sheldon Mann	317
Mr. and Mrs. Donard Fuehr	333
Mr. and Mrs. Marshall Finkelman	332
Mr. and Mrs. Nathan Gold	350
Mr. and Mrs. Wlater Newman	363
Mr. land Mrs. Welly Heim	369
Mr. and Mrs. Larry Selz	383
Mr. And Mrs. Leo Goldberg	386
Mr. and Mrs. Neil Schur	316 Seven Pines Circle
Mr. and Mrs. Louis Kaye	319 Seven Pines Circle
Mrs. Harriet Abrams	324
Dr. Irving and Mrs. Tracer	325
Mr. and Mrs. George Frey	333
Mr. and Mrs. Marc Grayson	334
Mr. and Mrs. Marvin Lieberman	342
Mr. and Mrs. David Weinstein	354
Mr. and Mrs. Gerald Brandt	367
Mr. and Mrs. Howard Zern	366
Mr. and Mrs. Arthur Krensky	383
Mr. and Mrs. Donald Lazar	334

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Mr. and Mrs. Courtney Shanken	331	Aspen Lane
Dr. and Mrs. Howard Wechsler	340	
Mr. and Mrs. Bernard Hirsch	347	
Mr. and Mrs. Richard Lewin	354	
Mr. and Mrs. Victor Goulding	363	
Dr. and Mrs. Lipkin	370	
Dr. And Mrs. Edward Salinas	383	
Mr. and Mrs. Harold Kugler	384	
Mr. and Mrs. Jerald Surell	178	
Mr. and Mrs. Elmer Siegel	185	
Mr. and Mrs. Burton Simon	192	
Mr. and Mrs. Martin Schneider	194	
Mr. and Mrs. Ted Tannenbaum	201	
Mr. and Mrs. Robert Lustbader	206	
Mr. and Mrs. Kenneth Braude	211	
Dr. and Mrs. Eli Freeman	216	
Dr. and Mrs. Lester Schwartz	226	
Mr. and Mrs. Harris	223	
Mr. and Mrs. Sidney Oberman	243	
Mr. and Mrs. Jordon Glassman	252	
Mr. and Mrs. Lotsoff	260	
Mr. and Mrs. Burton Kesner	261	
Mr. and Mrs. David Wenger	266	
Mr. and Mrs. Milton Robins	279	
Mr. and Mrs. H. Goldberg	280	
Mr. and Mrs. Edward Bazelon	295	
Mrs. and Mrs. Albert Weller	296	
Mr. and Mrs. Arthur Paid	315	
Mr. and Mrs. Yale Isaks	320	
Mr. and Mrs. Richard Saslow	270	Charal Lane
Mr. and Mrs. Howard Wittenberg	277	
Mr. and Mrs. Ralph Rose Jr.	295	
Mr. and Mrs. Morris Suson	312	
Mr. and Mrs. Michael Brown	322	
Mr. and Mrs. Bert Sommers	350	
Mr. and Mrs. Samuel [illegible]	357	
Mrs and Mr. Donald [illegible]	363	
Mr. and Mrs. Amos [illegible]	365	
Mr. and Mrs. Norman [illegible]	364	
Mr. and Mrs. Ralph Gadwitz	368	
Mr. and Mrs. Harry Katz	741	Stone Gate Dr.
Mr. and Mrs. Lawrence Novak	754	
Mr. and Mrs. Arnold Tatar	761	
Mr. and Mrs. Carl Garland	766	
Mr. and Mrs. Martin Rosenfeld	774	
Mr. and Mrs. Melvin Gore	778	
Mr. and Mrs. Adolph Kraus	787	
Mr. and Mrs. Jack Soloman	791	
Mr. and Mrs. Alan Inbinder	800	
Dr. and Mrs. Joseph Dizler	811	
Dr. and Mrs. Mendel Schwartz	812	
Mr. and Mrs. Ronald [illegible]	801	

NOT REPRODUCIBLE

Mr. and Mrs. Maurice Gross	934	Stonegate Dr.
Mr. and Mrs. Marshall Kanter	932	
Mr. and Mrs. Allen Levinson	[illegible]	
[illegible]	[illegible]	
[illegible]	[illegible]	
Mr. and Mrs. [illegible] Sherman	[illegible]	
Mr. and Mrs. Milton Levenfield	[illegible]	
Mr. and Mrs. Leonard Morris	971	
Mr. and Mrs. [illegible]	[illegible]	
Mr. and Mrs. [illegible] Lerner	[illegible]	
Mr. and Mrs. [illegible] Greenberg	[illegible]	
Mr. and Mrs. Paul Lieberman	901	
Mr. and Mrs. Jerome Harris	912	
Mr. and Mrs. Melvin Zorn	913	
Mr. and Mrs. Sheldon Prizent	922	
Mr. and Mrs. Allan Gidwitz	925	
Mr. and Mrs. Harvey Wollner	932	
Mr. and Mrs. Howard Lidov	933	
Mr. and Mrs. Myron Jacobson	950	
Mr. and Mrs. Myron Levin	960	
Mr. and Mrs. Sheldon Epstein	961	
Dr. and Mrs. Irving Rosenfeld	923	
Mr. and Mrs. Chzewer	472	Hillside Drive
Mr. and Mrs. Howard Cohen	478	
Mrs. and Mr. Irvin Gordon	496	
Mr. and Mrs. Fredrick Soloman	510	
Mr. and Mrs. Grant	522	
Mr. and Mrs. Herbert Kahn	561	
Mr. and Mrs. A. Gaines	590	
Dr. and Mrs. Seymour Siegel	595	
Mr. and Mrs. David Kaufman	608	
Dr. and Mrs. Leonard Sarnat	611	
Mr. and Mrs. Richard Steifel	624	
Mr. and Mrs. Bernard Gross	635	
Mr. and Mrs. James Issaacs	651	
Mr. and Mrs. Sam Applebaum	530	
Mr. and Mrs. Arnold E. Reingold	400	
Mr. and Mrs. Emond Zizook	773	Highland Place
Mr. and Mrs. Philip Lederer	777	
Mr. and Mrs. Harold Olshansky	780	
Mrs. and Mrs. Stephen Ehrlichmann	781	
Mrsand Mrs. Armond Schoen	785	
Mr. and Mrs. Marshall Pekin	786	
Mr. and Mrs. Stanley Lansing	789	
Mr. and Mrs. Gerald Eisenstein	793	
Mr. and Mrs. Lloyd Kupferberg	794	
Mr. and Mrs. Norman Loevy	798	
Mr. and Mrs. Philip Kaplan	802	
Mr. and Mrs. Milton Klein	805	
Mr. and Mrs. Stanley Goldblatt	806	
Mrs. and Mrs. Roy Salvenko	809	
Mr. and Mrs. Arnold Learner	810	
Mr. and Mrs. Daniel Abrams	813	
Mr. and Mrs. Richard Flescher	817	
Dr. Edwin DeCosta	821	
Mr. and Mrs. Burton Chudacoff	825	
Mr. and Mrs. Ernest Koehler	829	
Mr. and Mrs. Richard Freeman	836	
Mr. and Mrs. Stephen Diamond	837	

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Mr. and Mrs. Alan Bloomfield	841 Highland Place
Mr. landMrs. Frank Moyer	845
Mr. and Mrs. Marvin Lee	[illegible]
Mr. land Mrs. Stanley Raklenter	[illegible]
Mr. and Mrs. Robert Lerner	[illegible]
Mr. and Mrs. Irwin Levin	[illegible]
Mr.. and Mrs. Perry Schwartz	[illegible]
Mr. and Mrs. Gray Gable	[illegible] Clavey Court
Mr. and Mrs. Gerald Fortis	511
Mrs. and Mrs. Edward Schwartz	527
Mr. and Mrs. Laurence Tayne	543
Mr. and Mrs. Shewwin Janows	546
Mr. and Mrs. Herbert Schneiderman	562
Mr. and Mrs. Jerry Pedicone	575
Mr. and Mrs. Millard Volin	430 Clavey Lane
Mr. and Mrs. A. A. Carlton	450
Mr. and Mrs. David Superfine	476
Mr. and Mrs. William Rosskam	487
Mrs. and Mrs. L. Feiler	511
Mr. and Mrs. Edwin Turner	514
Mr. and Mrs. Irving Coppel	533
Mr. and Mrs. Jpseph Licata	124 Hiawatha Trail
Mr. and Mrs. Arthur Hahn	551 Clavey Lane
Mr. and Mrs. Frank Baum	570 Clavey Lane
Mr. and Mrs. Louis Steinberg	578 Clavey Lane
Mr. Richard Kahn - FOR NORTHMOOR COUNTRY CLUB	
Mr. and Mrs. LeRoy Carlson	1323 Hiawatha Ct.
Mrs. and Mrs. Martin I. Goodman	1037 Brittny
Mr. and Mrs. Maurice Unger	1275 Sherwood
Dr. and Mrs. Joel Kaplan	1248 Waverly
Dr. and Mrs. Jack Arbit	730 Kimball
Mr. land Mrs. Jack Berkson	431 Sheridan Rd.
Mr. and Mrs. Manny Windton	Marion
Mr. and Mrs. Melvin M. Falkof	421 Lakeside
Mr. and Mrs. J. P. Lebow	445 Homewood
Mr. and Mrs. Wm Ladany	2323 Linden
Mr. and Mrs. Joel Fox	1765 Dale Ave
Mr. and Mrs. Alvin Gaines	1123 BobOLink
Mr. and Mrs. David R. Kanski	1662 McCarren
Mr. land Mrs. Lester Acelrod	
M4r. and Mrs. S. Buchsbaum	
Mr. and Mrs. Richard C. Reshman	
Mr. and Mrs. Sheldon Karon	
Mr. and Mrs. Ludwig Streifinder	
Alan Michell	866 Marion
Mr. and Mrs. A. H. Michaels	1014 Marion
Mr. and Mrs. Bjorn Sornsen	479 Burton
Mrs. and Mrs. Laurence Reich	1180 Ridgewood
Mr. and Mrs. Wm Berman	1354 Lincoln
Mr. and Mrs. Jacob Rosenstein	881 Marion
Dr. and Mrs. Eugene Blonsky	438 Lakeside
Mr. and Mrs. Seymour Banksh	1915 Old Briar
Mr. and Mrs. Richard Weinstein	844 Barberry
Mr. and Mrs. Ralph Wanger	165 Maple
Mr. and Mrs. Rodkin	178 Lakside Place
Mr. and Mrs. Poncher	303 Deer Park
Dr. and Mrs. Melvin Salk	1723 Ryders Lane
Mr. and Mrs. David White	471 Lakeside Pl.
Mr. land Mrs. Manuel Kramer	2121 Churchill Ct.

NOT REPRODUCIBLE

Page 6

Mr. and Mrs. Ralph Le[illegible]	[illegible] Marvell Lane
Mr. and Mrs. Gerald I. [illegible]	[illegible] Sherwood
[illegible]	[illegible] Lane
[illegible]	
[illegible]	[illegible]lliams
[illegible]	[illegible]
[illegible]	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Mr. [illegible] Alton R. [illegible]	[illegible]
Mr. [illegible] Samuel [illegible]	[illegible] Lane
Mrs. [illegible] Albert	[illegible]
Mr. and Mrs. Leonard [illegible]	[illegible]
Donald Z. Zimmerman	
Dr. Robert Kerrer	
Alvin Weinberg	
Mr. and Mrs. Richard J. Ludwig	
Mr. and Mrs. Jennings	221 Palech[illegible]
Mr. and Mrs. Milton Rock	403 Sheridan Road
Dr. and Mrs. Maurice Pickard	1393 Sheridan Road
Dr. and Mrs. Sol Ralklin	
Mr. and Mrs. Lawrence J. Curley	
Dr. and Mrs. Samuel Frareman	2238 Lyandale
Mr. and Mrs. Stiebel	550 Rambler Lane
Mr. and Mrs. Theodore Less	1782 Winthrop
Dr. and Mrs. Patrick Israel	1045 Wade
Mr. and Mrs. R. D. Igau	3118 Cato Avenue
Mr. and Mrs. Paul A. Friedman	1766 Blossom St.
Mr. and Mrs. Rubin D. Starr	597 Sumac
Mr. and Mrs. Richard M. Amend	451 Burton
Mr. and Mrs. Charles R. Perrigo	230 Cary Ave
Mr. and Mrs. Carson B. Trenor	1395 Southland
Mr. and Mrs. Bernard H. Karlin	949 Thackery
Gordon L. Styler	501 Sumac
Mr.. And Mrs. Walter J. Slockton	558 Skokie
Mr. and Mrs. Edwin Brown	514 Pleasant
Mrs. and Mrs. Renkin	598 Sheridan Road
Mr. land Mrs. Renate Illes	450 Lakeside
Mr. and Mrs. Gerald E. Granady	413 Rodge Road
Mr. and Mrs. Albert Cohn	796 Kimballwood
Mr. and Mrs. A. T. Petronen	43 Sheridan
Mr. and Mrs. William Kaplan	590 Rambler Lane

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NOT REPRODUCIBLE

"The ECC recommends to the City Council of Highland Park that the City officially support the following recommendation and send a letter of intent on this matter to the Federal Water Quality Administration Office of the United States Environmental Protection Agency before May 22, 1971.

1. All possible air pollutants be monitored.
2. The effluent lagoon will be eliminated in favor of the advanced sewage treatment facilities.
3. The storm retention basins be completely covered.
4. Trees and vegetation be planted to provide a buffer zone.

WHEREAS the Board of Education of School District 108 is concerned with the health and safety of students, and

WHEREAS this Board is interested in the value of its property holdings in the area of the Clavey Road sewage treatment plant, and

WHEREAS the Water Quality Office of the U. S. Environmental Protection Agency has asked for comments on the draft of its report,

NOW, THEREFORE, BE IT RESOLVED, that this Board of Education of School District 108 supports in principal the recommendations contained on pages 37-38 of the draft of the report of the Water Quality Office of the U. S. Environmental Protection Agency.

DONALD N. MANN
ATTORNEY AT LAW
111 SOUTH DEERE PARK DRIVE
HIGHLAND PARK, ILLINOIS 60035
IDLEWOOD 2-3305

May 19, 1971

Environmental Protection Agency
Water Quality Office
Room 410
33 West Congress Parkway
Chicago, Illinois 60605

ATT: Mr. Gary W. Schenzel
Water Resources Planner - Planning Branch

Dear Mr. Schenzel:

By action of the Board of Directors of the Deere Park Neighborhood Assoc., taken on Wednesday, May 19, 1971 we wish to go on record as favoring the FEDERAL WATER QUALITY OFFICE draft as to the matter on Clavey Road in Highland Park, Illinois.

We believe such action is necessary to preserve not only the community but also the total ecology of the area.

We offer our support and help in anyway possible.

For the BOARD OF DIRECTORS DEERE PARK. NEHBRHD. ASSOC.

BY Donald N. Mann
DONALD N. MANN PRESIDENT

Campaign Against Pollution

Co-Chairmen
PAUL R. BOOTH
REV. LEONARD DUBI
GAIL CRANDUS

600 west fullerton ave.
chicago, illinois 60614

929 2922

May 21, 1971

Mr. Gary W. Schenser
Water Resources Planner
Water Quality Office
Room 410
Environmental Protection Agency
33 West Congress Parkway
Chicago, Illinois 60603

Dear Mr. Schenser:

The Campaign Against Pollution (CAP), an organization devoted to fighting pollution in the greater Chicago metropolitan area commends the Federal Water Quality Office (FWQO) for an objective study and analysis of the North Shore Sanitary District proposed expansion.

The Environmental Impact Statement, the first of its kind, could set a precedent in providing a vehicle to counteract local governmental red tape and bureaucracy, for the benefit of the people. This draft and future studies can assure all Americans safe, healthfully productive and esthetically pleasing surroundings.

CAP commends the FWQO recommends except that the final size of the Clavey Road Plant should be kept to an absolute minimum to protect people and the environment in the area of the plant.

Sincerely,

Paul R. Booth
Co-Chairman

Rev. Leonard Dubi
Co-Chairman

cc: William Ruckleshaus
David Dominick
Ames Turner

jg/

NEWS RELEASE

SAVE , The Society Against Violance to the Environment, Supports the Federal Water Quality Environmental Draft of April 23, 1971, except that the final size of the Clavey Road Plant should be resolved after a more detailed engineering analysis has taken place.

Passed by the members
of Save May 4, 1971

Sandy
Sandy Buchbaum
Chairman Society Against Violance to
the Environment.

NORTH SHORE RADIOLOGISTS, S. C.
2500 RIDGE AVE., SUITE 203
EVANSTON, ILLINOIS 60201
TELEPHONE 869-4660

RICHARD C. TURBIN, M.D.
MARTIN [illegible]ERKOWITZ, M.D.

May 17, 1971

Environmental Protection Agency
Water Quality Office
Room 410
334 W. Congress Parkway
Chicago, Illinois 60605

Mr. Gary W. Schenzel
Water Resources Planner
Planning Branch

RE: Clavey Road S.T.P.
Federal Water Quality Office
Environmental Draft

Dear Mr. Schenzel:

I have before me a copy of your Clavey Road draft. I support these measures and urge that they be implemented.

I feel that a 12 MGD plant is still too large, and that a definite health risk potential exists. As the draft apparently represents the only effective counter measure to the plans of the North Shore Sanitary District, I give it my full support.

Very truly yours,

Richard C. Turbin, M.D.

RCT:ds

cc: Anne Turner, P.E.

100 west madison street · chicago, illinois 60606 · (312) andover 3-1266

NORTHEASTERN ILLINOIS
PLANNING COMMISSION

MATTHEW L. ROCKWELL
Executive Director

LEE M. BURKEY
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Vice President
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Secretary
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Treasurer

IN REPLY REFER TO

May 10, 1971

Mr. Gary Schenzel
Regional Director
Water Quality Office
U.S. Environmental Protection Agency
Region V
33 East Congress Parkway
Room 410
Chicago, IL 60605

Dear Mr. Schenzel:

In accordance with your request of April 22, please find a copy of our comments on the Draft Environmental Statement recently forwarded to us.

Sincerely,

M. L. Rockwell

Matthew L. Rockwell
Executive Director

MLR:im
Encl.

RICHARD F. BABCOCK, Attorney · IRA J. BACH, Pres., Urban Associates · [illegible] · FRANK BELLINGER [illegible]
LEE M. BURKEY, Mayor of La Grange · FRED M. DUMKE, Mayor of Oak Lawn · [illegible] Cook County Board · EARL [illegible] · RALPH H. METCALFE
LEWIS W. HILL, Chicago Commissioner of Planning · C. LeROY JAMES, DuPage County Board · ALBERT [illegible]
[illegible] House of Reps. · HERMAN L. OLIVO, Will County Board · ROBERT F. OLSON [illegible] · WALDEMAR A. [illegible]
[illegible] Kane County Board · JAMES J. RYAN, Former [illegible]

North Shore Sanitary District Plan

Evaluation of Water Quality Office, Environmental Protection Agency

DRAFT IMPACT STATEMENT

1. Purpose - The purpose of this memorandum is to review the referenced Impact Statement transmitted to us by letter dated April 22, 1971, which consisted of the draft Statement itself and appendices A thru E.

2. Scope - The report covers the entire plan of the North Shore Sanitary District (NSSD). However, the only reasons for the report itself are the diverse opinions concerning the Clavey Road wastewater treatment plant. Accordingly, these comments will restrict themselves to that facility.

3. Size - The Clavey Road plant now handles between 5.5 and 6.0 MGD as an annual average during the past two years. The original plan called for the expansion of this facility, with the diversion of the wastewater loads to it from five other existing plants located on the lakefront. The plans were to provide for future growth as well and for a higher degree of treatment to meet current and proposed water quality standards. The NIPC Regional Wastewater Plan envisions that by 1990 the load coming to the plant would be 28.9 MGD, and by the year 2010, 35.7 MGD. However, by mutual agreement between the NSSD and local officials, after a series of legal and administrative actions, the NSSD agreed to restrict the ultimate capacity to 18.0 MGD. This decision implied the obligation to construct the required extra capacity elsewhere in the system.

   a. The five lakeside plants which are to be abandoned have experienced annual average loads during the past two years which ranged between 6.0 MGD and 6.6 MGD. Accordingly, if these loads were instantaneously transferred to the Clavey Road facility, the current load would be between 11.5 MGD and 12.6 MGD.

   b. The Clavey Road plant is being expanded to 18.0 MGD but will not be ready for use until sometime in mid-1973. If allowances for normal growth in the area are included, the required capacity at that time will be higher than the current load, giving due consideration to sewer permits already issued. At the same time, cognizance is taken of the Illinois Environmental Protection Agency ban against any additional sewer connections, an action which was recently taken. Thus, the question of wastewater loads by mid-1973 becomes somewhat academic, but certainly will be on the order of 12 MGD.

c. The draft Impact Statement includes the finding that the expansion of the Clavey Road plant should be limited to 12.0 MGD. The rationale is that this size will permit the plant to accommodate the current load now being treated at Clavey and the five lakefront plants.

d. The lead time necessary for starting planning and finally constructing a supplementary plant elsewhere will be further lengthened by whatever delays are incurred before a final decision is reached on the ultimate size of the Clavey Road plant.

e. It is good engineering and economics to construct municipal wastewater treatment facilities so as to accommodate future (forecast) wastewater loads. For permanent facilities, a design period of fifteen to twenty years in the future is acceptable. Construction to accommodate merely the immediate loads is rarely, if ever, done and thus would be contrary to good judgement and past experience.

f. The NIPC Regional Wastewater Study, which was made prior to the adoption of the Regional Wastewater Plan, gave due consideration to all of the factors which have been presented in this Impact Statement. After a number of conferences with affected municipal governments, public officials and private groups, and after a series of public meetings and hearings, the Plan was adopted on March 3, 1971. It calls for a size of 18 MGD.

g. It is concluded that no information has been revealed in this Impact Statement which would lead to a reduction in this capacity.

4. Environment - Our studies took cognizance of the past problems of odors and other related nuisances associated with the operation of the Clavey Road plant. We found that these resulted from a variety of reasons which ranged from inexperienced employees working on newly constructed (or expanded) facilities, equipment breakdowns, etc., to the actual overloading of the plant itself. It would be an irrational conclusion that these occurrences could be guaranteed not to ever occur again. However, it can be said that they can be reduced to a minimum by public pressure (such as is currently existing), by the new water quality standards and by stricter enforcement procedures, together with better training of employees, redundancy in critical equipment and the elimination or reduction in plant overloading. We sympathize with the nearby residents

who have had their sensibilities insulted during the past. At the same time, we should call attention to the fact that in at least two areas in our region, wastewater treatment plants have attracted urbanization literally up to the fence and property lines of recently constructed wastewater treatment plants. The Metropolitan Sanitary District of Greater Chicago Hanover plant is one example. Perhaps more dramatic is the South Naperville plant, which is currently being expanded and upgraded. Concurrently with the work now underway, townhouses and apartments are being constructed directly across the street from the plant, a distance of less than one hundred feet. Other townhouses are being constructed directly across the West Branch of the DuPage River, which the plant site abuts. The conclusion that residences in the immediate vicinity of treatment plants are not automatically ruled out is self-evident. The fact that developers and occupants are currently doing this elsewhere is prima facie evidence. It is further concluded that any delays in diverting the wastewater effluents from Lake Michigan will have a continuing adverse impact on the enjoyment of Lake Michigan as a recreational site and a source of potable water, by a far larger number of people who already have been denied this use for a number of years, or who have had to pay a premium.

5. Participatory Democracy - Decisions such as these, in the past, have usually been made on the basis of technical engineering judgements and sound economics. Within recent years, it has been necessary to consider environmental and sociological impacts. Decisions in these latter fields are recognized as being based on political and emotional reactions of the affected persons. This is rightfully so, since exact quantitative measures are impossible to achieve. Consistent with the aforegoing new approach, it has been recognized that the affected persons should have a voice in influencing the final choice or decision. Hence, the phrase "participatory democracy". In the NSSD area, the people in the entire District have spoken and made their choices known by a favorable bond referendum supporting the financing of the system as is currently being espoused by the officials of that District. In the closer area of Highland Park itself, elected officials have reacted by negotiating the reduction in size of the plant, limiting it to 18 MGD and calling for the installation or construction of other safeguards and controls. The objections to the system as currently envisioned are limited to a small group of persons who are directly affected. The basic principles of democracy call for the exercise of governmental decisions by those directly affected or through their elected officials. It appears that this has been done in the NSSD. Unfortunately, the decision is unacceptable to a few.

Businessmen for the Public Interest
109 North Dearborn Street
Suite 1001
Chicago, Illinois 60602
(312) 641-5570

Gordon Sherman
President
Alexander Polikoff
Executive Director
Marshall Patner
General Counsel
David Dinsmore Comey
Director of
Environmental Research
Thomas R. Meites
Associate Counsel

BY MESSENGER
May 24, 1971

Water Quality Office
Region V Environmental Protection
Agency
33 East Congress Street
Chicago, Illinois 60605

Re: Comments of Businessmen for the Public Interest on Draft Environmental Impact Statement, Released on April 23, 1971, Respecting Sewerage Project No. WPC-Ill.-754, Submitted by North Shore Sanitary District, Waukegan, Illinois.

Gentlemen:

We appreciate the opportunity to submit the following comments to you on the above Draft Environmental Impact Statement.

1. Inadequate Size of the Proposed 12 mgd Clavey Plant

The Draft Environmental Impact Statement (hereinafter the "Draft Statement") recommends a reduction in the proposed capacity of the Clavey Plant from 18 to 12 mgd. (p.37.) The Draft Statement asserts that the smaller capacity will be sufficient to handle the total sewage flow, estimated to be approximately 11.3 mgd (p.24), required to be handled by the Clavey Plant during the "next several years." (p.23.) This is the time it is expected to take to provide a "relief plant" on the Des Plaines river, recommended to be built near the Lake-Cook County line. (p.37.)

It appears to us that the Draft Statement is in error both in its estimate of the flow required to be handled during the next several years and in its estimate of the time required to provide additional capacity at a new Des Plaines River location.

As disclosed in testimony before the Illinois Pollution Control Board, North Shore Sanitary District records show a measured flow of 12.0 mgd during the summer of 1969 (the five lakefront plants plus Clavey Road) and 12.1 mgd during the summer of 1970. Increased flow resulting from new construction since the summer of 1970 is of course to be anticipated. Indeed, the Draft Statement itself states that the Clavey Plant must be designed to treat a "minimum sewage flow of 12 mgd." (p.28, emphasis added.)

The Draft Statement estimates that additional recommended capacity (in the amount of 18 mgd) can be provided in a new facility to be located near the Des Plaines River within "the next several years." (p.23.) It appears to us that the Draft Statement's assumptions in this regard are unrealistic and fail to take account of facts which make the realization of the Des Plaines Plant objective, within the assumed time period, highly unlikely.

The North Shore Sanitary District does not at present own land on the Des Plaines River; property in the area suggested by the Draft Statement - near the County Line - has already been subdivided, with the consequence that many different owners of real estate are involved; the area is at present outside the territorial jurisdiction of the Sanitary District; and the Sanitary District does not have a "quick taking" power under Illinois law. For these several reasons, the land acquisition process is likely to be lengthy. Experience suggests that it may take at least several years.

Assuming that plans and specifications are prepared while land is being acquired, construction would still take several additional years. It thus appears that a new facility at the Des Plaines Location might not be made available within less than six years. Even this time frame may be optimistic because the resolution of some of the difficulties, for example, the legal question with respect to territorial jurisdiction, is not predictable. Accordingly, even assuming the desirability of constructing an additional facility on the Des Plaines River as recommended by the Draft Statement, such a "relief plant" could not be counted on to be available in less than six years, and perhaps not then.

It follows that the Clavey Road expansion must be large enough to handle anticipated flow without "relief" for at least the next six years. As noted above, that flow will be in excess of 12 mgd at the time the Clavey expansion is completed. It will increase thereafter. The Draft Statement itself suggests that even an 18 mgd Clavey Plant would require "a second plant at Des Plaines" in about five years. (p.30.) If the flow at Clavey is expected to be 18 mgd within 5 years, it is difficult to see how a facility of lesser capacity than that can be recommended now.*

2. Retention Basin Capacity at Clavey Road

The Draft Statement rightly rejects the discharge of stormwater overload into Lake Michigan from the northern end of the Sanitary District territory. (p.27.)

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*The consequence of overloading a Clavey Road Plant expanded to only 12 mgd must be a discharge of inadequately treated effluent either to Lake Michigan or to the Skokie drainage area. The former possibility is not to be countenanced for the reasons set forth in the brief, previously submitted to the Illinois Pollution Control Board by Businessmen for the Public Interest, a copy of which is attached hereto. We will not in these comments repeat the brief's observations respecting the critical condition of Lake Michigan but respectfully refer the Water Quality Office thereto. We believe it to be plain that the critical condition of Lake Michigan, poised as it may be at the breakpoint of irreversible degradation, renders this alternative completely inadmissible.

Discharge of the overload through the Skokie drainage ditch is also extremely undesirable, and would mean continuing environmental degradation to the Skokie Lagoons area.

The Draft Statement also says that when the Highland Park lakeside plants are phased out, the "levels of stormwater infiltration into the sewers will have been substantively checked." (p.24.) No evidence is referred to to support this conclusion. Independent inquiry of Highland Park officials suggests that it is overly optimistic.

The same principle of course applies at the southern end of the District, and retention basin capacity large enough to handle stormwater overflow must therefore be provided.

The Draft Statement suggests a reduction in the capacity of the retention basin at Clavey Road from twenty to ten million gallons, subject to reevaluation. (p.31.) It seems quite plain that, for the reasons given above, the smaller retention basin capacity will not be adequate to handle the anticipated stormwater overflow. Indeed, if the treatment capacity of the Clavey Plant is to be "shaved" close to the anticipated maximum load, it is especially important that retention basin capacity be sufficient to provide for larger than projected flows.

(Without explanation, the Draft Statement, while recommending a 33-1/3% reduction in the capacity of the Clavey Plant, recommends a 50% reduction in the capacity of the retention basin. The disproportion seems unjustified. And although additional retention basin capacity is recommended at the lakefront sites (p.37), there is inadequate discussion of this possibility and strong doubt as to the advisability of such a step. It is questionable, for example, whether sufficient land area exists and even if it does, whether retention basins are an appropriate use for lake front land.)

3. Health Concerns

It seems clear that were it not for the health concerns expressed in the Draft Statement the proper course of action would be to expand the Clavey Plant at this time sufficiently to handle anticipated future flows with a safe margin of error. The health concerns are undoubtedly the principal reason for the Draft Statement's recommendation that the projected size of the Clavey Plant be reduced.

It cannot be said with absolute scientific certainty that the concerns respecting health are without any foundation. It can be said, however, that the operation of a much larger facility of the Metropolitan Sanitary District of Chicago in a residential area on the north side of Chicago for many years has not produced any known health problems. The sheer size of this facility, 400 mgd as compared with the proposed 18 mgd for Clavey (operated, incidentally, with completely uncovered retention basins as contrasted with the partially covered basins proposed for Clavey), suggests that the health concerns may be unfounded or minimal. In any event, if future research should prove otherwise, the covering of retention basins could then be required.

While health concerns are of course paramount, health concerns arise from a continued overloading of the Clavey Road facility as well. The consequence of such overloading, as noted, is to discharge inadequately treated sewage into the public's waters, producing a health concern of a sort which is well documented and scientifically established, as contrasted with theso far undocumented and unestablished concern referred to in the Draft Statement.* If, as we believe, the practical choice which the District faces is to continue to overload the Clavey Plant for some years or to build adequate capacity into that Plant now, the known facts concerning health concerns seem to dictate the latter course.

* * *

There are many additional aspects of the Draft Statement about which it would be appropriate to comment, e.g., the likelihood that revision of plans now will delay completion of the Clavey Plant expansion and thereby delay cessation of discharges to Lake Michigan. However, we have deliberately confined these comments to what seem to us to be a few observations which, taken together, strongly indicate that revision of the Draft Statement is required. As our amicus brief to the Illinois Pollution Control Board indicates, the supervening environmental concern at this time must be for the condition of Lake Michigan. In our view, for the reasons given above, this consideration dictates the present expansion of the Clavey Road facility substantially as originally proposed.

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*The evidence respecting airborne transmission referred to in the Draft Statement appears to relate to the activated sludge process, not to waters which are quiescent as they will be in the Clavey Plant retention basin.

Very truly yours,

BUSINESSMEN FOR THE PUBLIC INTEREST

By
Alexander Polikoff

David Dinsmore Comey

ALP:eo
Enc.

ARGONNE NATIONAL LABORATORY

May 24, 1971

Mr. R. J. Schneider
Regional Director
Water Quality Office
U. S. Environmental Protection Agency, Region V
33 East Congress Parkway, Room 410
Chicago, Illinois 60605

Dear Mr. Schneider:

This is in reference to the Draft Environmental Impact Statement prepared by your office for the NSSD Sewerage Project Number WPC-Ill.754.

In general, I find the impact statement to be accurate and agree with your recommended modifications for the project.

The relatively small marginal costs which you associate with your proposed modification of the Clavey Road facility appear to be justified in terms of improved air quality in the immediate vicinity of the plant and in terms of improved water quality downstream of the plant.

I would like to suggest that the Water Quality Office consider a detailed water quality monitoring program for the Skokie River. The Skokie River represents a "managed environment" and offers an excellent opportunity for evaluating on a small scale the benefits to be derived from improved waste water management practices.

Sincerely yours,

Joseph G. Asbury

Joseph G. Asbury
Center for Environmental Studies

JGA:nck

9700 South Cass Avenue, Argonne, Illinois 60439 Telephone 312 739 7711 · TWX 910 258 3285 WUX LB, Argonne, Illinois

find fault with the Committee. We have in the past ourselves. However, in our hearts we know we could never fault these people for their purpose. We believe that every person has a basic, undeniable right to a clean and unpolluted environment. If those residents had not united and cried out their rights would have been violated with the presence of an air polluting sewage plant in their back yard.

Unfortunately, our group has also in the past found fault with the North Shore Sanitary District. The district is too often motivated by economic considerations and have a tendency to "cut corners." This is why we are so thankful for the Water Quality Office stepping in with an impact statement. We believe the report, if adhered to, will assure us of a safe plant at Clavey Road.

We realize that there is opposition to the report. The Illinois Pollution Control Board, a just and honorable board, approved the NSSD's expansion plans(adding tertiary treatment). We are afraid, however, that the control board gave the district too much leeway on what the district is able to decide to do.

The city of Highland Park has also not officially supported the impact statement although neither do they support the control board's ruling. The city wants to remain neutral and just doesn't want to offend anybody. It's understandable of course but it's just so frustrating, so depressing to see politics getting mixed in with efforts to stop pollution.

Please sir, we appeal to you, stick to your report. Be above politics and act honorably. Our city, caught in between in this conflict, has sincerely tried to act as mediator and to do what is right for the people. However the city just doesn't have the power or influence to bring this messy and damaging conflict to a close. You do. Because you sir, have the ultimate tool for leverage, the almighty dollar. We urge you to make these points non-negotiable: a covered storm retension basin, no effuent lagoon, advanced water treatment facilities adequate for the Skokie Lagoon, restoration of any of the landscape damaged during constuction, and a sewage plant as small and safe as possible.

In closing I want to say this. Next fall for the first time in our nation's history a new class of citizens will have the vote, 18 year-olds. For years now students have lashed out against the system they have so much disdain for. Next year I, like millions of other college students, will have my first chance to participate in our political system with a vote. We students will have an unprecedented opportunity to bring about

Campaign Against Pollution

600 west fullerton ave.
chicago, illinois 60614

929 2922

Co-Chairmen
PAUL R. BOOTH
REV. LEONARD DUBI
GAIL CRANDUS

May 21, 1971

Mr. Gary W. Schenzer
Water Resources Planner
Water Quality Office
Room 410
Environmental Protection Agency
33 West Congress Parkway
Chicago, Illinois 60605

Dear Mr. Schenzer:

The Campaign Against Pollution (CAP), an organization devoted to fighting pollution in the greater Chicago metropolitan area commends the Federal Water Quality Office (FWQO) for an objective study and analysis of the North Shore Sanitary District proposed expansion.

The Environmental Impact Statement, the first of its kind, could set a precedent in providing a vehicle to counteract local governmental red tape and bureaucracy, for the benefit of the people. This draft and future studies can assure all Americans safe, healthfully productive and esthetically pleasing surroundings.

CAP commends the FWQO recommends except that the final size of the Clavey Road Plant should be kept to an absolute minimum to protect people and the environment in the area of the plant.

Sincerely,

Paul R. Booth
Paul R. Booth
Co-Chairman

Rev Leonard Dubi
Rev. Leonard Dubi
Co-Chairman

cc: William Ruckleshaus
David Dominick
Amos Turner

jf/

vast new reforms for the good of this nation. Will our idealism for change be converted into constructive efforts to make our government respond of will our hopes be soured by a view of government as corrupt and unrepresentative. Don't you see sir, whether of not I cast a vote or a brick next year could very depend on your decision.

GARDNER, CARTON, DOUGLAS, CHILGREN & WAUD
ONE FIRST NATIONAL PLAZA
CHICAGO, ILLINOIS 60670
AREA CODE 312 726-2452
CABLE GARCAR

JAMES H DOUGLAS
ARTHUR D CHILGREN
MORRISON WAUD
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WILLIAM J NEALON
RAY GARRETT JR
PETER H MERLIN
JOSEPH P CARR
JAMES J McCLURE JR
JOHN J CLERKIN
THOMAS ARTHUR
WILLIAM L MORRISON
JOHN K NOTZ JR
GORDON LANG JR
JOE A SUTHERLAND
DALE PARK JR
JOHN F BEGGAN
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HENRY A GARDNER
1883-1968
ALFRED T CARTON
1884-1966

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BARRY T McNAMARA
JOHN E REINERT
JAMES G REYNOLDS
ROBERT J WILCZEK

May 21, 1971

Mr. Richard MacMullen
United States Environment
Protection Agency
Federal Water Quality Office
Room 410
333 East Congress Parkway
Chicago, Illinois 60605

Re: North Shore Sanitary District
Clavey Road Sewage Treatment Plant

Dear Mr. MacMullen:

Further to our recent telephone conversation I would like to submit the following information on behalf of the Chicago Horticultural Society, of which I am a Vice President and for which I act as legal counsel.

(1) The Chicago Historical Society is in the process of constructing a botanic garden on some 300 acres of land leased from the Forest Preserve District of Cook County at a site immediately south of Lake Cook Road and east of Kennedy Expressway. The East Skokie Drainage Ditch bisects this tract of land.

(2) Since the effluent of the Clavey Road Sewage Treatment Plant and other sources of pollution render the water of the East Skokie Drainage Ditch totally unusable for any purpose, the Society has been forced to divert the ditch under and around the site of the botanic garden. This diversion was accomplished at great expense to the Society (something in excess

in saving the East Skokie Drainage Ditch and restoring it to a state of cleanliness so that its waters cease to be a health hazard and become useable again for at least plant watering purposes.

We sincerely hope that the progress which is being made through your efforts in connection with the elimination and pollution caused by the Clavey Road sewage treatment plant will not end at this point but that they will continue diligently with a view towards eliminating all other sources of pollution.

If you have any questions please do not hesitate to contact me at your convenience.

Sincerely yours,

Peter H. Merlin

mp

cc: Dr. George W. Beadle, President
Chicago Horticultural Society

of $300,000) and is still the source of considerable trouble. Without diverting the waters of the East Skokie Drainage Ditch the site would be totally unusable for any purpose. Yet the City of Highland Park, property owners and golf courses immediately to the north of Lake Cook Road continuously accuse the diversion system erected by the Society as the cause of a variety of flood conditions north of Lake Cook Road. This is the case in spite of the fact that the diversion system has been approved by the State of Illinois (Division of Waterways) and in spite of changes which were made in this system after public hearings in August of 1969.

(3) The Society has repeatedly emphasized its position that as the builder and operator of a botanic garden it is in great need of water usable for plant purposes. The Society now purchases such water at considerable expense from the Village of Northbrook. If the waters of the East Skokie Drainage Ditch were not so heavily polluted with organic and nutrient materials, the Society could use such waters and save the expense of purchasing water from Northbrook. Furthermore, if the waters of the East Skokie Drainage Ditch were clean the present diversion system would not be needed.

(4) The Society therefore welcomes any efforts on the part of the Federal Government, and in particular of your office, to require the Clavey Road Sewage Treatment Plant to adhere to the highest standards of water quality. We urge that all precautions be taken to guarantee that the effluent of the treatment plant be of purest quality and that under no circumstances (even in case of emergencies) untreated sewage or substandard effluent be permitted to enter the East Skokie Drainage Ditch.

(5) However, I must emphasize that the Clavey Road sewage treatment plant is by no means the sole source of pollution of the East Skokie drainage ditch. Even if the Clavey Road sewage treatment plant did not exist the East Skokie Drainage Ditch would still carry substantially polluted water to the site of the botanic garden and on down into the Skokie lagoons. The Society is in no position with its limited resources to undertake whatever steps may be necessary to clean up the East Skokie Drainage Ditch. We therefore hope that your office will be instrumental

Students Organized for Survival
P.O. Box 271
Highland Park, Illinois
60035

May 24, 1971

Mr. Gary W. Schenzel
Room 410
33 West Congress Parkway
Chicago, Ill. 60035

Dear Mr. Schenzel,

I am writing to inform you that our group, Students Organized for Survival, supports the draft of the Environmental Impact Statement done by Region V of the Water Quality Office of the U.S.E.P.A. in regards to the application of the N.S.S.D. sewerage project no. WPC-Ill.-754.

Our organization represents those students at Highland Park High School concerned with protecting our natural environment. We basically concern ourselves with what goes on in Highland Park because this is the area in which we can exercise the most influence. One of the more prominent things we have concerned ourselves with this year has been, you guessed it, the Clavey Road Sewage Plant.

In regards to this controversial plant we have seen adults act more childishly than we ever did. To our dismay we have sometimes seen people,,some very influential, act not out of environmental concerns, but out of economic, political, and even personal ones. Of the whole NSSD operation in Highland Park what we have to say is thus: we applaud the district's plans to phase out the three lakefront plants and to divert the sewage to the Clavey Road plant for treatment. One of we kids' favorite summer pastimes is to swim at the beach. We feel it is about time the pollution of the lake is stopped. We also feel that the Clavey Road Sewage Plant should be expanded to handle the load pumped from the lakefront plants because a senseless delay in the lakefront plant phase-out plan would ensue if the Clavey Road plant was not the plant designated to handle this sewage.

We are also, however, quite vehement in our demand that the Clavey Road plant be a safe one. The Committee to Save Highland Park, the group of residents living near the plant, have caused ecological and economic delay in the dictrict's plans, and heartache for a lot of people. It is very easy to

OPEN
LANDS
PROJECT

53 W. JACKSON BLVD.
CHICAGO, ILLINOIS 60604
427-4256

JEFFREY R. SHORT, JR.
president

GUNNAR A. PETERSON
executive director

directors
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CHARLES F. SAMELSON, M.D.
FARWELL SMITH
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HARRY M. WEESE
GEORGE H. WOODRUFF, M.D.

May 21, 1971

Mr. William Ruckelshaus
Administrator
Environmental Protection Agency
1626 K Street
Washington, D. C. 20460

Re: Draft Environmental Impact Statement

Sewarage Project Number WPC-Ill.-754
Submitted by North Shore Sanitary District,
Waukegan, Illinois

Dear Mr. Ruckelshaus:

After reviewing the Draft Environmental Impact Statement from the Water Quality Office, Region 5, Federal Environmental Protection Agency, various reports of the State of Illinois Pollution Control Board, statements of the Lake Michigan Protectors of the Environment, and the Illinois League of Women Voters, the Open Lands Project would like to support the report and action of the State of Illinois Pollution Control Board.

We recognize the complicated problems with the North Shore Sanitary District and the Clavey Road Sewage Plant, but after reading the district's statement too, we feel that the recommendations of the State will accomplish more in the interest of protecting Lake Michigan immediately and in the long run than other alternatives.

Sincerely,

Gunnar A. Peterson

Gunnar A. Peterson
Executive Director

/ma

DCB 170

FOREST PRESERVE DISTRICT
of Cook County, Illinois

The Board of Commissioners

MATHEW W. BIESZCZAT	WILLIAM H. HARVE
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CHARLES J. GRUPP, JR.	JOSEPH I. WOODS

GEORGE W. DUNNE, PRESIDENT

GENERAL HEADQUARTERS: 536 NORTH HARLEM AVENUE, RIVER FOREST, ILLINOIS 6030
COLUMBUS 1-8400 / FOREST 9-9420

Arthur L. Janura, GENERAL SUPERINTENDENT

April 28, 1971

RECEIVED
APR 30 197
POLLUTION CONTROL BOARD

Chairman
Illinois Pollution Control Board
189 West Madison Street
Chicago, Illinois 60602

Dear Sir:

The recent proposal by the Federal Environmental Protection Agency to discharge effluent from the Skokie River Watershed into the DesPlaines River does not have our support.

We strongly expressed our opposition to the removal of any flow from the Skokie River at a public hearing held in Riverside, Illinois earlier this year.

The Forest Preserve District has some of its finest recreational lands along the Skokie drainage system and the ecology of these lands is dependent upon present water tables. To divert any portion of these flows to another watershed would constitute tampering with the natural setting and would very likely influence the entire Skokie Lagoon system and all other forested areas adjacent to the water course.

The Skokie Lagoons have great significance with regard to a man-made flood control system that offers recreational opportunity to hundreds of thousands of visitors each year. With the nearby Botanical Gardens, the importance of the Skokie River and its water quality grows even more important. It would seem that this most recent proposal has given little consideration to the ecological consequences or to the possible detrimental effects to the public recreational lands that have and continue to serve the recreational needs of people.

170

634

RECEIVED
APR [illegible]
POLLUTION CONTROL BOARD

We hold fast to our opposition to the DesPlaines River proposal and seek the retention of a greatly improved water quality discharge into the natural watershed which is the Skokie River.

Sincerely yours,

Arthur Janura
Arthur L. Janura,
General Superintendent

ALJ:es

May 6, 1971

Mr. William Ruckelshaus, Director
U.S.E.P.A.
1626 K Street N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus:

As participants in the Lake Michigan Interleague Group and members of the League of Women Voters of Illinois we are deeply concerned about the recent recommendations of the U.S. Environmental Protection Agency to the North Shore Sanitary District, placing limits below those previously approved by the Illinois Pollution Control Board for the construction and expansion of the Clavey Road sewage disposal plant in Highland Park.

Once again controversy brings much delay in a situation, which at its best sends raw, untreated sewage into Lake Michigan. We strongly back the recommendations of the Illinois Pollution Control Board. We urge you to intervene and give your strong support to those plans set forth by the Illinois Pollution Control Board in behalf of the millions of people who use Lake Michigan.

Last November, the Anti-Pollution Bond Act, for which we worked so hard, was passed, but Illinois has received no matching federal grants under the Clean Water Restoration Act which soon expires. Our concern deepens as the July 1, 1971 deadline approaches and no new legislation to extend the federal grant program is forthcoming. We ask your immediate help in obtaining the legislation to make available future funds which are so essential to clean up Illinois lakes and rivers.

Yours very truly,

(Mrs.) William J. Pietenpol
Environmental Quality Chairman

(Mrs.) Stephen J. Fraenkel
President

MAY 10 10 00 AM '71
ENVIRONMENTAL PROTECTION AGENCY

We wanted you to have a copy of this letter

LEAGUE OF WOMEN VOTERS OF GLENCOE, ILLINOIS

May 5, 1971

The Honorable Charles H. Percy
Senate Office Building
Washington, D. C. 20510

Re: Objection to the reduction in capacity of the proposed expansion of the sewage treatment plant on Clavey Road, Highland Park, Illinois.

Dear Senator Percy:

In the proposed preliminary environmental assessment by the Office of Water Quality, U.S. Environmental Protection Agency, reg. V, recently issued to the North Shore Sanitary District of Lake County, there is a recommendation to reduce the capacity of the sewage treatment plant being expanded on Clavey Road. An earlier NSSD plan had called for expanding this plant to 24 mgd (million gallons a day). At the request of the City of Highland Park, the plan was changed to an 18 mgd expansion, and approved by the Illinois Environmental Protection Agency on December 23, 1970. The recent recommendation by the U.S. EPA is to limit the plant capacity to only 12 mgd, and to reduce the planned storm water retention basin to 10 million gallons from the original 20 million gallons.

The League of Women Voters of Glencoe, Illinois, strongly objects to such a reduction in capacity of the expanded Clavey Road plant. The purpose of the expansion is to transfer to the expanded plant the load of five small and outdated primary treatment plants on the lakefront, which presently discharge inadequately treated and often raw sewage directly into Lake Michigan. The sum of the present loads of Clavey Road and of the plants to be closed already amounts to 11.5 mgd in dry weather. Thus a plant expanded to 12 mgd will make no allowance for growth of the community, and none for wet weather flow. The plant of such capacity will be already inadequate on the day when it is completed.

Less capacity and reduced retention size will cause more frequent discharge of incompletely treated sewage into the Skokie Ditch. The pollution of the Skokie lagoons directly affects our community, and others along the North Shore. A more serious consequence, affecting millions of people, is that the disagreement between the assessment of the U. S. EPA and the order of the Illinois Pollution Control Board (see enclosed newsletter), adding to the controversy and litigations by nearby residents and other groups, may delay for years the termination of pollution of Lake Michigan by the North Shore Sanitary District. The controversy is blocking the funds available to the NSSD, both from a bond issue and from federal money, and therefore may jeopardize the timely completion of the District's entire effluent diversion program, of which Clavey Road is only a part. Furthermore, the U. S. Congress has failed to authorize funds to aid the continuation of antipollution projects after July 1, 1971.

We therefore respectfully urge you (1) to intervene in behalf of the plan sanctioned by the Illinois PCB against pollution of the Lake (making the $11.55 million of federal money available to the NSSD), and (2) to help making further U.S. funds available in the future.

Yours very truly,

Nancy Liebschutz

Mrs. Leonard Liebschutz
President

Encl/
Newsletter # 19
State of Illinois Pollution Control Board

East Skokie DRAINAGE DISTRICT
Suite 300
1811 St. Johns Avenue • Highland Park, Illinois
Telephone IDlewood 2-4070

COMMISSIONERS
Mortimer Singer, Chairman
XXXXXXXXXXX Dr. Hilbert E. Lang
Lee F. Cora

May 4, 1971

Mr. John C. Guillou, Chief Engineer,
Division of Waterways,
Department of Public Works and Buildings,
201 West Monroe,
Springfield, Ill. 62700

Re: North Shore Sanitary District Proposed Outfall Structures on Right Bank of the Skokie River in Highland Park, Lake County, Illinois.

OBJECTIONS OF THE EAST SKOKIE DRAINAGE DISTRICT

Dear Mr. Guillou:

This will acknowledge receipt of your notice dated April 26, 1971 relative to the above subject matter. We have had no notice of this application from the North Shore Sanitary District. Please be advised as follows:

1. North Shore Sanitary District at no time applied to us as provided by Statute for approval of their proposed 72" effluent outfall headwall nor for the 63"x98" elliptical storm drain outfall headwall. Both of these headwalls are planned to be within the right-of-way of the East Skokie Drainage District, and inasmuch as they will interfere with our plans in regard to the full use of our easement, we find same objectionable.

2. On April 19th, on their invitation, they met with the undersigned and our engineer, Mr. James C. Anderson and with Highland Park City Engineer, Mr. Philip Dittmar, at the North Shore Sanitary District offices at Waukegan.

3. They presented to us a proposal whereby they would remove the present 60" effluent outfall pipe which invades the right-of-way about 35', and would convey to the East Skokie Drainage District a 50' right-of-way easement for drainage purposes on the opposite bank of the East Skokie Drainage ditch. They asked in return, that we

permit the new 72" effluent outfall headwall and the new 63"x98" elliptical outfall headwall to remain 35' from the center of the present ditch, and were to confirm this proposal in writing, which if accepted, would be followed by a Deed of Dedication or Easement to the 50'. To date, we have not received any written confirmation of this proposition nor any Deed of Dedication or Easement.

Our acceptance of their proposal would be based on the following representations made to us, and we reserve our rights in the event that these representations are not borne out by the facts:

(a) That there will be no flooding as a result of the plant installation proposed or in progress or completed, no back-up in the East Skokie Drainage Ditch and no interference with the normal drainage waterflow.

(b) That in the event of any apparent need for use of the increased 50' right-of-way, or if at any time, in the judgment of either the North Shore Sanitary District or the East Skokie Drainage District, it becomes necessary or advisable, they will excavate to provide a shelf for the expansion during high water periods, onto this fifty foot shelf.

(c) That in the event of any flooding or water back-up, the North Shore Sanitary District will provide such storm drainage storage facilities as may be necessary.

(d) That they will not pollute the stream.

(e) That at the south end of this fifty-foot Dedication or easement, they will co-operate in providing for the expansion, either on the east bank or west bank or partially on both so that like facilities will be provided for run-off to County Line Road.

Very sincerely yours,

Mortimer Singer

MORTIMER SINGER, Chairman

MS:pm

western union **Telegram**

M/f 1971 MAY 18 PM 1 16

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GARY W SCHENZEL
WATER RESOURCES PLANNER EPA WATER QUALITY OFFICE ROOM 410
33 WEST CONGRESS PARKWAY CHGO 60605

WE COMMEND YOUR DRAFT ON CLAVEY PLANT AND COUNT ON YOU TO PROTECT ITS SCHIENTIFIC FINDINGS. LITERALLY THOUSANDS OF PEOPLE ARE WITHIN A MILE RADIS OF THE UNBELIEVEABLE PLANNED ENVIRONMENTAL DISASTER OF AN EXPANDED SEWAGE PLANT

MR AND MRS WARNER S KADDEN 851 TIMBER HILL ROAD HIGHLAND PARK ILL.

Recd 5/19/71 11:00am

SF-1201 (R5-69)

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western union **Telegram**

4 MA

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GARY W SCHENZEL, WATER RESOURCES PLANTER, E.P.A. WATER
QUALITY OFFICE ROOM 410 33 WEST CONGRESS PARKWAY CHGO 60605
BT

WOULD APPRECIATE OBJECTIVE STUDY OF CLAVEY ROAD SANITATION PLANT APPEARS AS IF YOUR OBJECTIVE REPORT WILL HAVE TOUGH GOING AGAINST LOCAL SANITATION DISTRICT BECAUSE OF LOCAL PORK BARREL POLITICS PLEASE DO YOUR BEST TO SEE THAT THIS PLANT IS PHASED OUT QUICKLY

ROBERT S. LERNER.

NNNN(0537P EDT)

Recd 5/19/71 [illegible]

western union

Telegram

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GARY W SCHENZEL, WATER RESOURCES PLANTER, E.P.A. WATER
QUALITY OFFICE ROOM 410 33 WEST CONGRESS PARKWAY CHGO 60605

BT

WOULD APPRECIATE OBJECTIVE STUDY OF CLAVEY ROAD SANITATION PLANT APPEARS AS IF YOUR OBJECTIVE REPORT WILL HAVE TOUGH GOING AGAINST LOCAL SANITATION DISTRICT BECAUSE OF LOCAL PORK BARREL POLITICS PLEASE DO YOUR BEST TO SEE THAT THIS PLANT IS PHASED OUT QUICKLY

ROBERT S. LERNER.

NNNN(0542P EDT)

Duplicate

SF-1201 (R5-69)

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western union

Telegram

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GARY SCHENZEL, WATER RESOURCES PLANNER
RM 410 33 WEST CONGRESS PARKWAY CHGO

BT

HAVE WAITED SO LONG FOR TRULY OBJECTIONAL STUDY OF CLAVEY ROAD S.T.P. EMBRACING GRANDVIEW OF GREAT LAKES WATER QUALITY CONTROL PROBLEMS. I COMMEND YOUR PRELIMINARY REPORT AND URGE YOU TO PROTECT ITS SCIENTIFIC FINDINGS AGAINST LOCAL GREED AND MISINFORMATION I URGE THIS PLANT BE PHASED OUT QUICKLY

RICHARD FLEISHER 817 HIGHLAND PLACE
HIGHLAND PARK ILL

NNNN(0706P EDT)

SF-1201 (R5-69)

western union

Telegram

1971 MAY 10 PM

TY CHICAGO

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WILLIAM RUCKELSHAUS, CARE FRANCIS T MAYO, ENVIROMENTAL
PROTECTION AGENCY, DLY 75
33 EAST CONGRESSPARKWAY ROOM 410 CHGO

QUESTION OF CLAVEY ROAD SEWAGE TREATMENT PLANT IN MIDST OF HIGH DENSITY RSIDENTIAL AREA OF URGENT CONCERN TOCESIDENCE OF COMMUNITY DETERMINATION OF EFFECTON OF POLLUTION ON MAN AS ORGANISM MUST BE GIN FIRST CONSIDERATION. TECHNOLOGY SECONDARY TO WELFARE OF RESIDENCE AND PROTECTION OF ENVIROMENT. FWQA DRAFT ASSESSMENT CALLS FOR STUDY OF POTENTIAL HEALTH HAZARDS TO RESIDENCE WHAT CONCRETE STEPS IS FEDERAL GOVERNMENT TAKING TO PROTECT OURSELVE AND OUR POSTERITY

GERALD L SURELL, LAKE MICHIGAN PROTECTORS OF THE ENVIRONMENT
354 MERCHANDISE MART CHICAGO ILLINOIS.

Recd 5/10/71

SF-1201 (R5-69)

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western union

Telegram

1971 MAY 10 PM

TY CHICAGO

FWQA 354.(1050)

SF-1201 (R5-69)

western union **Telegram**

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GARY SCHENZEL WATER QUALITY OFFICE EPA
33 ~~WEST~~ CONGRESS PARKWAY CHGO

COMMEND PRELIMINARY DRAFT ON CLAVEY PLANT FAVOR FEDERAL FINDINGS GOOD PLANNING IS KEYNOTE FOR FUTURE

VALICE AND DON GOLDSMITH 852 TIMBER HILL ROAD HIGHLAND PARK ILL.

SF-1201 (R5-69)

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western union **Telegram**

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GARY
W SCHENZEL
WATER RESOURCES PLANNER EPA ENVIRONMENTAL PROTECTION AGENCY
ROOM 410 33 EAST CONGRESS PARKWAY CHGO

COMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT AGAINST POLITICAL PRESSURES

MR AND MRF GEORGE BERLIANT 913 TIMBER HILL ROAD HIGHLANDPARK ILL.

SF-1201 (R5-69)

western union **Telegram**

MAY 20 PM 1 07

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GARY W SCHENZEL
WATER RESOURCES PLANNERSEPA ENVIRONMENTAL PROTECTION AGENCY
ROOM 10 33 EAST CONGRESS PARKWAY CHGO

COMMEND YOUR PRELIMINARY DRAFT ON CWAVEY POLLUTION PLEASE PROTECT AGAINST POLITICAL PRESSURES

MR AND MRS SANFOR
BERFAY 830 HIGHLAND PLACE HIGHLAND PARK ILL

Recd 5/21/71
9:45am

SF-1201 (R5-69)

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western union **Telegram**

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GARY W SCHENZEL, WATER RESOURCES PLANNER, EPA ENVIRONMENTAL PROTECTION AGENCY
33 EAST CONGRESS PKWY ROOM 410 CHGO

RECOMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT AGAINST POLITICAL PRESSURES

MR AND MRS GERALD FACTOR 383 HASTINGS HIGHLAND PARK ILL.

383.(734)

Recd 5/21/71
9:45am

SF-1201 (R5-69)

western union

Telegram

1971 MAY 20 PM 7 37

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DE HPA095.
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GARY W SCHENZEL
WATER RESOURCES PLANNER EQA ENVIRONMENTAL PROTECTION AGENCY
ROOM 410 33 EAST CONGRESS PARKWAY

COMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT AGAINST POLITICAL PRESSURES

MR AND MRS JORDAN GLASSMAN 252 ASPEN LANE HIGHLAND PARK ILL.

Recd 5/21/71 9:45am

SF-1201 (R5-69)

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western union

Telegram

LLD171 (42)(57)DEB213
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GARY SCHENZEL CARE WAZER QUALITY OFFICE
33 ~~WEST~~ CONGRESS CHGO

1971 MAY 20 PM 4 48

MA

PROTECT PEOPLE RIGHTS CLAVEY PLANT HAZARDOUS PLEASE HELP US

SIDNEY SHAPIRO 288 HASTINGS RD HIGHLAND PARK ILL

Recd 5/21/71 9:45am

western union **Telegram**

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GARY W SCHENZEL WATER RESOURCES PLANNER EPA ENVIRONMENTAL
PROTECTION AGENCY
ROOM 410 33 EAST CONGRESS PAJKWAY CHGOCOMMEND YOUR PRELIMINARY
DRAFT ON CLAVEY POLLUTION PLEASE PROTECT AGAINST POLITICAL
PRESSURES
MR AND MRS RICHARD LEWIS 344 HASLINGS AVE HIGHLAN
PARK ILL.

Recd 5/21/71
9:45am

SF-1201 (R5-69)

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western union **Telegram**

LLF166 (57)(30)DEC233
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GARY W SCHENZEL
WATER RESOURCES PLANNER EPA ENVIRONMENTAL PROTECTION AGENCY
ROOM 410 33 EAST CONGRESS PARKWAY CHGO
COMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT
AGANST POLITICAL PRESSURES
MR AND MRS VICTOR GOULDING 363 ASPEN LANE HIGHLAND PARK ILL.

Recd 5/21/71
9:45am

SF-1201 (R5-69)

western union Telegram

LLD179 (57)(51)DEC194
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GARH SCHENZEL US ENVIRONMENTAL PROTECT
33 EAST CONGRESS EXPRESSWAY CHGO

1971 MAY 20 PM 5 08

WE COMMEND YOU ON STRONG STAND TAKEN CONCERNING THE CLAVEY ROAD SEWAGE TREATMENT PLANT AND LAKE MICHIGAN

WE ARE GLAD YOUR OFFICE WAS NOT INFLUENCED BY ANY POLITICAL COMMITTMENT CONTINUE YOUR UNBIAS WORK

DR AND MRS JERALD MILLER 1893 SHERIDAN ROAD HIGHLAND PARK ILL.

Recd 5/21/71
9:45am

SF-1201 (R5-69)

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western union Telegram

1971 MAY 21 AM 7 35

MA

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GARY W SCHENZEL, DLY 75
WATER RESOURCES PLANNER EPA WATER QUALITY OFC RM 410
33 WEST CONGRESS PARKWAY CHGO 60605
EAST
BT

HAVE WAITED SO LONG FOR TRULY OBJECTIVE STUDY OF CLAVEY ROAD STP EMBRACING BROAD VIEW OF GREAT LAKES WATER QUALITY CONTROL PROBLEMS I COMMEND YOUR PRELIMINARY REPORT AND URGE YOU TO PROTECT ITS SCIENTIFIC FINDINGS AGAINST LOCAL GREEN AND MISINFORMATION.
I URGE THIS PLANT BE PHASED OUT QUICKLY

MR AND MRS PAUL A BROWN 303 HASTINGS ROAD HIGHLAND PARK ILL
NNNN(0733A EDT)

Recd 5/21/71
9:45am

western union **Telegram**

1971 MAY 21 AM 8 14

LLA026 (11)C003
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GARY W SCHENZEL EPA WATER QUALITY OFFICE RM 523
33 W CONGRESS PKWAY CHGO 60605
BT

WE COMMEND PRELIMINARY DRAFT ON CLAVEY. PROTECT FEDERAL FINDINGS
GOOD PLANNING IS KEYNOTE

MR AND MRS ALLAN EDELSON 263 HASTINGS RD HIGHLAND PARK ILL
NNNN(0902A EDT)

Recd 5/21/71 9:45am

SF-1201 (R5-69)

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western union **Telegram**

1971 MAY 21 AM 12 06

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GARY W CHENZEL WATER RESOURCES PLANNER EPA ENVIRONMENTAL PROTECTION AGENCY
ROOM 410 33 EAST CONGRESS PKWY CHGO

COMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT
AGAINST POLITICAL PRESSURES

MR AND MRS LES POLWACK 343 HASTINGS AVE HIGHLAND PARK ILL.

343.

Recd 5/21/71 9:45am

SF-1201 (R5-69)

western union **Telegram**

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US ENIVORNKENTAL PROTECTION AGENCY REBION 5
33 EAST CONGJESS PARKWAY CHGO
FWEASE FOLLOW THE RECOMMENDATION OF THE FEDEJAL ENIVORNMENTAL PROTECTION AGENCY NOR THE CLAVEY ROAD SEWAG PLANT PROTECT THE LAKE AFD THE PEOPLE
MR AND MRS EDWARDSPAZELON
(9202.

1971 MAY 21 AM 42 CHICAGO

Recd. 5/21/71
11.05am

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western union **Telegram**

TYA007 (34)KQILDEA052
DE HPA023 NO PDF HIGHLAND PARK ILL 21 350A CDT
GARY SCHENZEL IS ENIVORNMENTAL PROTECTION AGENCY REGION 5
33 EAST CONGRESS PARKWAY CHGO
I SUPPORT THE FWQA REPORT REGARDING THE NSSD AND THE CLAVEY ROAD STP
LOIS H ZISOOK 775 HIGHLAND PL HIGHLAND PARK ILL

FWQA NSSD STP
910).

GET SIGNATURE

1971 MAY 21 AM 41 CHICAGO

Recd 5/21/71
11.05am

western union **Telegram**

TYA005 (13)(07)DED007
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GARY W SCHENZEL, WATER RESOURCES PLANNER EPA ENVIRONMENTAL
PROTECTION AGENCY RM 410
33 E CONGRESS PARKWAY CHGO

COMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT
AGAINST POLITCAL PRESSURES

DR AND MRS WILLIAM MELTZER 793 TIMBER HILL HIGHLAND PARK
ILL.;

Recd 5/21/71
11:05am

SF-1201 (R5-69)

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western union **Telegram**

TYA003 (35)(22)DED013
DE HPA023 MO PDN HIGHLAND PARK ILL 21 919A CDT
GARY SCHENZEL WATER RESOURCES PLANNER WATER QUALITY OFFICE
ROOM 410 EPA
33 EAST CONGTESS PARKWAY CHGO

1971 MAY 21 AM 41 CHICAGO

HAVE WAITED SO LONG FOR TRULY OBJECTIVE STUDY OF CLAVEY ROAD STP EMBRACING GRANDVIEW OF GREAT LAKES WATER QUALITY CONTROL PROBLEMS. I COMMEND YOUR PRELIMINARY REPORT AND URGE YOU TO PROTECT ITS CIENTIFIC FINDINGS AGAINST LOCAL GREED AND MISINFORMATION. I URGE THIS PLANT BE PHASED OUT QUICKLY

MRS ROBERT M KUPCHICK
(922).

Recd 5/21/71
11:05am

SF-1201 (R5-69)

western union **Telegram**

TYA002 (53)SPC027 (03)DEA029
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GARY W SCHENZEL WATER RESOURCES PLANNER EPA ENVIRONMENTAL
PROTECTION AGENCY
ROOM 410 33 EAST CONGRESS PARKWAY CHGO

ET SIGNATURE

COMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT AGAINST POLITICAL PRESSURES

DR AND MRS SEYMOUR SIEGEL 595 HILLSIDE DR HIGHLAND PARK ILL.

recd 5/21/71
11:05am

SF-1201 (R5-69)

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western union **Telegram**

ET SIGNATURE 21

TYA003 (01)SPC023 (59)DEA023
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GARY W SCHENZEL, WATER RESOURCES PLANNER EPA ENVIRONMENTAL
PROTECTION AGENCY ROOM 410 33 EAST CONGRESS PARKWAY CHGO

COMMEND YOUR PRELIMINARY DRAFT ON CLAVEY POLLUTION PLEASE PROTECT AGAINST POLITICAL PRSSURES

MR AND MRS LAWRENCE PERLSTEIN 379 TIMBER HILL ROAD HIGHLAND PARK ILL.

recd. 5/21/71
11:05am

SF-1201 (R5-69)

western union **Telegram**

LLH040 (12)LLCA007
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GARY SCHENZEL, WATER RESOURCES PLANNER
EPA ENVIRONMENTAL PROTECTION AGENCY RM 410 33 EAST CONGRESS
PKWY CHGO

D TY

1971 MAY 22 PM 4 17

PROTECT DRAFT AGAINST LOCAL POLITICAL GREED MISINFORMATION PLEASE PROTECT OUR HEALTH WELFARE AND HAPPINESS

MR AND MRS JOSEPH RUBIN 367 HASTINGS HIGHLAND PARK ILL.

367.

recd. 8:15 am 5/24/71

SF-1201 (R5-69)

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western union **Telegram**

TYA024 (06)(08)MD184
M OAB030 EI PD OA CHICAGO ILL 21 1231P CDT
US ENVIRONMENTAL PROTECTION AGCY, DLY .75
33 EAST CONGRESS PKWY CHGO

1971 MAY 21 PM [illegible]

GET SIGNATURE [illegible] CHICAGO

WE SUPPORT YOUR POSITION RE: THE CLAVEY RD. PLANT AND URGE IT BE IMPOSED ON THE N.S.S.D

MR/MRS ED SOLLO 3392 SUMMIT HIGHLAND PARK ILL 60035.
(1244)

recd 5/21/71 3:25 pm

SF-1201 (R5-69)

123 Broadway
Wilmette, Ill.
60091
April 28, 1971

Dear Sir:

We back the Illinois Pollution Control Board's solution to the problems of the North Shore Sanitary District. Local laws should take precedence over anything the federal government suggests.

The proposed federal solution would cause delay and more cost.

A few Highland Park people should not be allowed to stop expansion of the Clavey Road Treatment plant. They will cause all of Lake Michigan to be polluted.

Yours Truly
Mrs. Frank Tachau

May 13, 1971

Federal Water Quality office
33 E. Congress Pkwy
Chicago, Ill. 60153

Gentleman;

I am a 6th grader fighting against pollution. I hope you will not lit the untreated sewage into Lake Michigan or the Des Plaines river from the North Shore Sanitary District.

Sincerely
Don Moore
825 Newcastle
Westchester Ill. 60153

P.S. If you have any information on water pollution I would appresate it very much.

1001 Bristol
Westchester Ill
5/13/71

Federal Water Quality Office
33 E Congress PKwy
Chicago, Ill
60605

Dear Gentlemen;

My name is Chris Conaboy I'm a 11 years old Do not allow North Shore Sanitary District to send their untreated sewage into Lake Michigan or the Desplains River. Thank you.

Sincerely, Yours
Chris Conaboy

P.S Send Information

[illegible]

May [illegible] 1971

Gentlemen,

Please do not allow the North Shore Sanitary District send their untreated sewage into Lake Michigan, and the Des Plaines River. Because Lake Michigan is where we get our drinking water, and Des Plaines River [illegible] to [illegible] looking at polluted rivers.

I have heard that North Shore Sanitary District is using the money they got for cleaning up, is being used to build another place to dump their sewage. Please don't let them.

One more question. What are you people doing about this?

Thank you for taking your time to read this.

Sincerely,

[illegible]

[illegible] School

1104 Hull ave.
Westchester, Ill.
May 13, 1971

Federal Water Quality Office
33 E. Congress Pkwy.
Chicago, Ill. 60605

Gentlemen:

Please do not allow the North Shore Sanitary District to send their untreated sewage into Lake Michigan or the Des Plains river. This raw sewage or untreated sewage is very bad, and we are drinking it. I am only in Sixth grade and I care so should you!

Sincerely yours,
Mary La Vier
1104 HULL AVE.
Westchester, ILL.
60153

237 Newcastle
Westchester Ill
60153

Dear Mr. Train,
I'm a sixth grader Butler School.
Please [illegible] the North Shore Sanitary [illegible] Water [illegible] untreated, sewage into Lake Michigan & the Des Plaines River.
[illegible]?

Thank you,
[illegible] Kennedy

811 Newcastle
Westchester, Ill
May 13, 1971

Dear Sir,

I'm a sixth grader and very concerned about pollution.

I do have one request, do not allow North Shore Sanitary Dist. to send their untreated water and sewage into Lake Michigan or the Des Plaines River.

Please do help,
we need it!

Sincerely,
Andreanna Grace

PS We are putting 2 letters in 1 envelope as to save envelopes!

1116 Manchester
Westchester Ill. 60153
May 13, 1971

Gentlemen;

I am a sixth grader at Britten School, and very concerned about pollution. I would like to request that you would not let North Shore Sanitary Dist. send their untreated water into the Des Plains River and Lake Michigan. PLEASE!

a Pollution fighter
Diane Duncan

622 Westchester Blvd
Westchester, ill
60153

To Federal water quality office
33 E. Congress Pkwy
Chicago, ill
60605

Dear. gentlemen

Donot allow north Shore Sanitary District to send their sewage into lake michigan or Desplaines river

from
Tony
Sawyer

802 Gardner Rd
Westchester Ill
60153

Gentlemen:

I am a sixth grader and I am conserned about the junk you are leting the North Shore Sanitary District to send their junk in the Lake or Des Plaines river. Please help stop them.

Yours truly,
Cathy Walter

766 Norfolk
Westchester,
Illinois
60153
May 13, 1971

Dear Sir:

I am a sixth grader at Britten School in Westchester. I am very much against pollution and the untreated sewage that you sending in our waters. Why can't you make a man made lake and send the raw sewage there. I hope we getting the message. Our sixth grade class is doing a lot, like, having 2 litter contests, and doing things. I hope you do something about your terrible problem, and ours.

Yours Truly,

Cynthia A. Milecevich
766 Norfolk
Westchester, Illinois
60153

Marcia Lindgren
918 Hull Ave
Westchester Ill.

Dear Gentlemen,

Do you want sewage to drink or clean water. Please — do not allow the North Shore Sanitary District to send their untreated sewage into Lake Michigan or the Des Plains river.

P.S.
Please
Please

Sincerily
Marcia
Lindgren

Don't let them
Get away with it,

Please

[illegible] 13 10 38 [illegible]
[illegible]

1000 Hull ave.
Westchester. Ill.
May, 13, 71

Gentlemen;

Do not allow North Shore Sanitary District to send their untreated sewage into Lake Michigan on the Des Plains river. Don't let them get away with it. We want water to drink not sewage. They have no right to do that. Thank-You

Cindy Hill

824 Hull ave.
Westchester Ill.
May 13, 1971

Gentlemen;

I am a sixth grade student at Britten Grade school in Westchester. Please do not allow the North Shore Sanitary District to send their untreated sewage into Lake Michigan or the Desplains River. I am a pollution fighter and Thank-you.

Sincerely,
Cheri Balint
824 Hull ave.
Westchester Illinois
60153

1011 Hull Ave
Westchester, Ill
May 13, 1971

Gentlemen,

I am concerned about pollution. I'm in 6th grade and I go to Bullen School.

I'm also concerned about water purification. Please do not throw raw sewage into the Des Plaines river and into the Michigan Lake!

Please start something, quick!

A pollution fighter,
Jody Widena

to: Federal Water Quality
33 E. Congress Pkwy
Chicago, Ill. 60605

Dear Sir,

I am writing to you because I ara not to happy about how you are sending untreated sewage into our Lake Michigan. Me and my friend Tony are sending our letters together because we do not want to waist paper. Please send ne a answer.

Yours Truly,

John Ulm
913 Suffolk
Westchester Ill.
60153

[illegible]

Gentlemen:

Please do not allow North Sanitary District To send their untreated sewage into Lake Michigan or the Des Plaines river. It's very bad for us.

Sincerly
Steve Frandsen

Gentleman,

Please do not allow North Shore to dump sewage in are water supply.

Sincerely,

203 Manchester
Westchester, Ill
60153

Dear Gentlemen,

Please do not allow North Shore Sanitary District to send their untreated sewage into Lake Michigan or the Des Plaines River. Please don't let 'em!

Respectfully Yours
Robert Klages

820 BRISTOL
Westchester
ILL. 60153.
May 13, 1971

Dear Sirs,

Please do not let the North Shore Sanitary send their untreated sewage into the Mich. Des Plaines River.

P.S. Please try your hardest to stop it.

Karen Kellogg

743 Hull Ave.
Westchester, Ill.
May 13, 1971

Gentlemen,

I'm a pollution concerned sixth grader. I'm writing about the North Shore Sanitary District. I'd like you to help stop letting them dump untreated sewage into Lake Michigan. Thank you for your time and cooperation.

Sincerely yours,
Donn DeMuro

629
Balmoral
Westchester
ILL

Gentleman

Do not allow North shore Sanitary District to send their untreated sewage into to Lake Michigan or the Des Plaines river

Sincerely Yours
Bill Cronin

753 Cromwell
Westchester, Ill
May 13, 1971

Gentlemen;

I'm a sixth grader and very concerned about pollution of all kinds. Please don't allow North Shore Sanitary District to dump their raw sewage into Lake Michigan or the Des Plains river. Thank You.

Sincerely,

Sharon Owen

MAY 17 10 32 AM '71

May 13, 71
740 Gardner Rd.
Westchester Ill.
60153

Dear gentlemen,

Do not allow the North Shore Sanitary District to send raw untreated unhealthy and unhuman sewage into Lake Michigan and the Des Plains.

Dan Daley

908 Westchester Blvd.
Westchester, Illinois
60153

Federal Water Quality Office
33 E. Congress Pkwy.
Chicago, Illinois
60605

Gentlemen,

I have come under the impression that you can do something of what I am interested in.

The North Shore Sanitary District is sending untreated sewage into Lake Michigan and the Des Plaines river.

You and I know this is wrong but unfortunately I can't do to much about it but since you can I am writing to encourage you to do your best to stop these polluters.

Chris Swider
Student

703 Westchester
Westchester, Ill.
May 13, 1971

Gentlemen,

I am a 6 th grade student doing my part against pollution. Please don't allow North ~~S~~ Shore Sanitary District to sent their untreated sewage into Lake Michigan or the Des Plaines river

Sincerely yours
Cyndee Boraz

706 Bristol
Westchester Ill
May. 13 1971

Federal Water Quality Office
33 E. Congress Pkwy
Chicago Ill. 60605

Gentlmen,

I find you the only one that can help me. Please do not allow North Shore Sanitary Districk to send their untreated sewage into Lake Michagan or the Des Plains River.

Thank-You.

Sincerly
Susan Como

10841 Martindale Dr
Westchester Ill
60153

Gentlemen:

I'm writing because I surely don't want the raw sewage to go into Lake Michigan or the Des Plaines River. I certainly do hope that the North Shore Sanitary District doesn't let it go there, please stop it.

Bridget Hayden

736 Worchester
Westchester Ill.,
May 13, 1971

Dear Gentlemen:

I am a six grader and very much against pollution. Do not allow all the untreated sewage go to Lake Michigan and Des plaines river. This sewage is going to flood us and please try to find a nother way to put the sewage away. I will be glad if you would try. Thank you.

Sincerely yours,
Scott Pape

000 Westchester Blvd
Westchester Illinois
May 13, 1971

Gentlemen:

I am very concered about Lake Michigan and the Des Plains River. Would you like drink waste water? Well I dont, and am sure other people dont either. And I am very worried about pollution. So do not allow North Shore Sanitary District to send their untreated into Lake Michigan and Des Plains River

Very worried Person
Linda Koseman

P.S. There is a nother letter from the girl friend because we dont wanta to waste trees

MAY 13 10 38 AM '71

622 Portsmouth
Westchester, Ill.
60153

Dear Gentlemen,

I'm in sixth grade and I am concerned about pollution. Which is exactly why this letter is written to you Do not allow North Shore Sanitary District to send their untreated sewage into LAke Michigan or the DES Plaines river. And I do not like drinking dirty water. Do you? Well if you do, thats your problem, but I don't think your very fair to the people outside of you. Thank you for reading this letter.

Your Pollution
fighter,
Michelle Leopold
6th grade Britten School

Schenzel
Tech Prog

copy

505 Maple Avenue
Wilmette, Illinois
60091
April 24,1971

Mr. William D. Ruckelshaus
Administrator, U.S.E.P.A.
Washington, D.C.

Dear Mr. Ruckelshaus:

The statement of the United States Environmental Protection Agency in regards to the North Shore Sanitary District in Illinois was absolutely the most unbelievable, disappointing, truly alarming bit of Environmental news we could possibly have.

Unbelievable--because I had sat through all of the Illinois Pollution Control Board hearings on the Clavey Road plant, plus the meeting held by Lt. Governor Paul Simon, plus many other meetings in regard to this critical situation. I felt the Illinois Pollution Control Board came up with a realistic solution to get a long overdue job done. Getting the sewage out of the lake from those five treatment plants is of CRITICAL URGENCY.

Your action would make construction delay, add another $20 -to $35 million in costs, add nutrients to further speed up Eutrophication in Lake Michigan, and no doubt lead to no use of the Illinois beaches for a few years, plus add more cost to water purification plants. Your plan has absolutely everything negative in it that could possible be. I strongly feel Gary Schenzel was poorly informed if he did not hear all of the testimony and attened many other meetings related to the North Shore Sanitary District.

I sincerely feel the USEPA has made a big mistake in their decision on the North Shore Sanitary District. Also, no public hearing was held by the agency. A small group of citizens have held up construction for two years, adding a large financial burden to residents of the area, the state, and USEPA. The lake has suffered what may be irreparable damage because of this. Five and one half million people depend on the lake as a source of water. The Illinois Pollution Control Board ordered the NSSD to proceed at once to construct additional facilities at the Clavey Road treatment plant, and this would end putting almost raw sewage into the lake from five plants along the shore. The input of nutrients to the lake MUST STOP, for it is fast becoming eutrophic.

Since I attend all Pollution Control Board meetings and all of the hearings on the NSSD case and many others regarding the situation I found I fully agreed with the decision of the Pollution Control Board, because I had heard the testimony presented to them plus more. I am very much impressed with the integrity of this capable Board. Richard Kissel was a fair, dedicated hearing officer and the Board gave much thought to this important case. Mr. Schenzel totally disregarded the Board decision.

622 Portsmouth
Westchester, Ill.
60153

Dear Gentlemen,

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Your Pollution fighter,
Michelle Leopold
6th grade Britton School

Schenzel
Tech Prog

copy

505 Maple Avenue
Wilmette, Illinois
60091
April 24,1971

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Administrator, U.S.E.P.A.
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It was absolutely impossible for me to see how the federal EPA could possibly have come up with your decision. You certainly did not have the future of Lake Michigan in mind or the helth and water supply of millions of people. It seems to me Lake Michigan is more important to consider than the interests of 200 selfish citizens who shouldn't have purchased homes nest to a sewage treatment plant if they were concerned. The Clavey Road plant does have an odor now because it is overloaded, with proper expansion it will not. Expert witnesses have testified to this. Citizens residing next to similar treatment plants have not complained.

This is a matter of vital concern to all Illinois communities along the lake, including Chicago. Indeed it is of concern to all people living on Lake Michigan, and I feel certain that thousands of citizens will turn in on USEPA if you maintain the present position. I for one would spend a great deal of time urging citizen action on this vital matter.

Please, Mr. Ruskelshaus, reconsider this backward decision. The Clavey plant must be expanded to the full 18mgd at once. The smaller size plant would not have an adequate safety margin to handle the sanitary sewage. It will take much less time to enlarge Clavey than to build a new plant at County line. I wonder if Mr Schenzel has much experience with sanitary district treatment plants. I know our Illinois Board has a very competent meber who has.

He also ignored the fact that five and one half million people want a "safe, healthful, productive, and esthetically pleasing environment for Lake Michigan--not just for 200 Clavey Road residents. The interesting thing is that these same 200 also depend on the Lake for their water unless they use bottled woter--and they can afford that.

Mr. Ruckelshaus, I am afraid my letter is a bit strong, but I am really upset by this position the EPA has taken, and I beg of you to reconsider the situation. Please honor the position of the Illinois Pollution Control Board and let us get on with this clean-up of the lake that is so critically needed. I realize I am not an expert, but I try to get well informed.

I am looking forward to meeting you in May.

Very truly yours,

Mrs Eileen L. Johnston

cc: Francis Mayo USEPA
Governor Richard Ogilvie
William Blaser IEPA
Richard Kissel IPCB
Senator Adlai Stevenson
Senator Charles Percy
Repr. Philip Crane

NOT REPRODUCIBLE

If you missed the broadcast of this editorial, we hope you will read it. Your comments are always most welcome.
WBBM-TV editorials express the opinions of the station's management. Because we recognize that others may differ with our opinions, it is the policy of WBBM-TV to consider requests for broadcast time by responsible spokesmen representing opposing viewpoints.
LEON DREW,
Vice President/General Manager, WBBM-TV

Editorial CBS 2
WBBM-TV 630 NORTH McCLURG COURT CHICAGO, ILLINOIS 60611 (312) 944-6000

NORTH SHORE SEWAGE PLANTS

The North Shore Sanitary District was on the way to solving the major sewage problems of Eastern Lake County when the Federal Government entered the picture.

The district had planned expansion of the Clavey Road sewage treatment plant in Highland Park, new construction elsewhere, and the phasing out of five less than adequate sewage treatment plants along Lake Michigan.

These plans, though opposed by residents in the vicinity of the Clavey Road plant and delayed by protests, studies, and hearings, were finally given a go-ahead March 31st by the Illinois Pollution Control Board. Now, however, the United States Government, less than four weeks later, has released what is called an Environmental Impact Study and muddled up the whole project.

The Federal Government has said the Clavey Road plant should only be two-thirds as large as planned, that storm water retention basins must be fully covered, and that an additional sewage treatment plant must be built five miles to the west on the Des Plaines River ... recommendations that will be far more costly and create yet another delay.

The North Shore Sanitary District trustees, defying the Federal Government, say they are going ahead with their original plans. Such action, however, would jeopardize valuable federal grants, so the real answer is for the United States Government to reverse its position. The man to make that decision is William D. Ruckelshaus, head of the Environmental Protection Agency. WBBM-TV urges you to encourage him to make it.

CARD:

William D. Ruckelshaus
Environmental Protection Agency
Washington, D.C. 20242

PRESENTED ON TUESDAY, APRIL 27, 1971, AT 5:55 P.M.
BY RICHARD WESTERKAMP, EDITORIAL DIRECTOR OF WBBM-TV.

April 27, 1971

Mr. William D. Ruckelshaus
Administrator
U.S. Environmental Protection Agency
1626 K St. N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus,

I feel that it was a great mistake that the Federal government overruled the Illinois Pollution Control Agency in the Clavey Road sewage treatment affair. Construction has been held up for 2 years by 200 people while 5.5 million others watch Lake Michigan get more and more polluted Because of this federal decicion, Highland Park is going to continue to discharge its sewage into Lake Michigan for 2 to 5 years longer, an inexcusable delay. The cost will be higher. Finally, the federal government should not intercede when the state is doing a responsible job

I hope you will reconsider your action.

Sincerely,

Mrs Robert Pfutzenreuter

Mrs. Robert Pfutzenreuter
727 Linden Ave.
Wilmette, Ill. 60091

Copy to: Francis Mayo

CONGREGATION SOLEL

1301 Clavey Road • Highland Park, Illinois 60035 • IDlewood 3-3555
Arnold Jacob Wolf, *Rabbi*
Louis I. Heller, *Administrator*

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Morton A. Pierce

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RELIGIOUS SCHOOL

Chairman
Mrs. Marshall E. Domash

Principal
Rabbi Stanley D. Meisels

May 20, 1971

Mr. Gary W. Schenzel
Water Resources Planner
Environmental Protection Agency
Water Quality Office
33 West Congress Parkway
Chicago, Illinois 60605

Dear Mr. Schenzel:

We are writing you on behalf of Congregation Solel, a resident and concerned institution in the immediate area of the North Shore Sanitary District's Clavey Road Plant, Highland Park, Illinois. We have carefully reviewed the recommendations of your agency with respect to the enlargement of the Clavey Road Plant and believe them to be proper and required in this situation. We urge your agency to insist on the implementation of these recommendations by the North Shore Sanitary District.

Very truly yours,

CONGREGATION SOLEL

Morton A. Pierce, President

cc: Louis I. Heller
cc: Sidney C. Kleinman

Affiliated with the Union of American Hebrew Congregations

MILDRED KIRSCH
310 HASTINGS ROAD
HIGHLAND PARK, ILLINOIS 60035

Palange

Dear Mr. Dominick

I have waited so long for truly objective study of the Clavey Road Sewage Plant embracing grand view of Great Lakes Water Quality Control Problems. I commend your preliminary report and urge you to protect these scientific findings against local greed and mis-information.

I urge that this plant be phased out quickly

Sincerely

Mildred Kirsch

HOWARD C. WECHSLER, M.D.
340 Aspen Lane, Highland Park, Illinois 60035

Dear Mr. Schenzel,

I commend you on your Clavey Road environmental report. It is admirable to find a person sincerely interested in the pollution problems that have brought us to this ecologic crisis. I hope you will not be diverted by political pressure and remain steadfast in your conclusions and recommendations.

Sincerely
Howard Wechsler MD

BLANK PAGE

Mrs. Richard Stiefel
624 Hillside Drive
Highland Park, Illinois 60035

Dear Sir;

I want to commend you on your preliminary report of your objective study of the Clavey Road STP I urge you to resist political pressures and hope this plant will be phased out quickly.

Sincerely
Sally Stiefel

Mrs. John Burr Clavey
435 Clavey Lane
Highland Park, Illinois 60035

May 20, 1971

U.S. Environmental Protection Agency--Region 5
33 East Congress Parkway,
Chicago, Illinois 60605

Gentlemen:

It seems I have hoped in vain that someone would come up with what I consider to be the only logical solution to the problems of the Clavey Road Sewage Plant and the North Shore Sanitary District.

If one looks at the whole problem, rather than just a small portion, one can see that all of Lake County has problems with sewage disposal..not just the shore. There are about 35 various sewer districts ih the county, plus the County Public Works Department. All have problems due to the recent population growth of the County.

If all of these systems could be consolidated into one metropolitan system, treatment plants for the entire county could be located along the length of the Des Plaines River which bisects the county. The treatment plants could be located on flood plain land which is not suitable for residential use. Rather than pumping sewage the length of the county for treatment it would be possible to go the relatively shorter distance to the River. Where the County Forest Preserve owns river front land, it should be possible to trade land with that owned by the various Sewer Districts.

I realize that this solution would take action by the state legislature to disolve and consolidate the Sewer Districts, but I am sure the legislators would find their constituents agreeable, particularly to getting the treatment plants away from the population centers.

Very Sincerely,

Marjorie Fishbein Clavey

Marjorie Fishbein Clavey

229

Trinity Church 425 LAUREL AVENUE • HIGHLAND PARK, ILLINOIS 60035

18 May, 1971

Environmental Protection Agency
Water Quality Office
Room 410
33 West Congress Parkway
Chicago, Illinois 60605

Attention: Mr. Gary W. Schenzel

RE: Clavey Road Sewage
Treatment Plant

Dear Mr. Schenzel:

I wish to add my voice to those who are in support of the Federal Water Quality Office Environmental Draft regarding the Clavey Road Sewage Treatment Plant in Highland Park. I believe the provisions of the draft offer a reasonable solution to the controversy which has surrounded the proposed expansion of these facilities. No one, I'm sure, questions the need of the North Shore Sanitary District to improve their total facilities in order to help curb further pollution of Lake Michigan. Nonetheless, this must not be accomplished in a manner that will be detrimental in other ways to the health and welfare of our citizens. Again, I feel your draft provides a most equitable solution to this situation, and it is my sincere hope that its implementation can be secured.

Yours truly,

Douglas M. Spence

(The Rev.) Douglas M. Spence
Rector, Trinity Church

DMS:11

B'nai Torah
HIGHLAND PARK REFORM TEMPLE
2700 OAK STREET
HIGHLAND PARK, ILLINOIS

DR. SHOLOM A. SINGER
RABBI

May 19, 1971

Mr. Gary Schenzel
U.S. Environmental Protection Agency
Water Quality Office
33 East Congress Pkwy.
Chicago, Illinois 60605

Dear Mr. Schenzel:

As a member of the clergy of Highland Park I co-sponsored a resolution requesting a moratorium on construction of the proposed expansion of the Clavey Road Sewage Treatment Plant. The moratorium was sought so that the proper authorities could make a determination as to a suitable alternate site in a non-residential area and an investigation undertaken as to the potential health hazards of a sewage treatment facility located in a high density residential area.

I have followed the developments in the Clavey Road controversy with great interest and so it was with great satisfaction that I read the recent draft environmental impact statement on the proposed expansion of the Clavey Road plant. As a clergyman whose responsibility is to the community at large as an entity and to the individual residents of the city of Highland Park, I want to urge that the Environmental Protection Agency stand by its draft limiting the expansion to only 12 million gallons per day.

Further, I endorse the draft in its recommendation that the "necessary advanced waste treatment unit processes be provided." I agree that the retention basins be completely covered but I suggest the entire matter of locating retention basins in a residential area be re-evaluated. May I further suggest your agency take an adamant stand in opposition to the effluent lagoon now under construction. What the North Shore Sanitary District has done to that area in constructing the effluent lagoon is unconscionable -- this sort of thing simply has no place in the midst of a residential area containing homes, schools, houses of worship, public park land and thousands of school age children.

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In conclusion, I support the recommendation that a study be initiated to "ascertain the possibility of airborne infection from sewage treatment facilities."

Very truly yours,

Solomon A. Singer

Dr. Solomon A. Singer

cc: Mr. William D. Ruckelshaus
Director E.P.A.
Washington, D.C. 20460

ASSOCIATED ALLERGISTS, LTD.
111 NORTH WABASH AVENUE
SUITE 1516
CHICAGO, ILLINOIS 60602
332-4292
ALLERGY

Norman J. Ehrlich, M.D.
Donald B. Frankel, M.D.
Arnold A. Gutman, M.D.
Angelo E. Falleroni, M.D.
Donald P. Schwartz, M.D.

May 18, 1971

Environmental Protection Agency
Water Quality Office
Rm 410 - 33 West Congress Pkwy.
Chicago, Illinois 60605

ATTENTION: MR. G.W. SCHENZEL

Dear Mr. Schenzel:

I would like to add my name to the list of physicians in Highland Park who oppose enlarging the Clavey Road Treatment Plant.

I am an allergist with an office in Highland Park and I have many patients with bronchial asthma and other respiratory disorders who live in the area near the plant. Since patients with allergic respiratory disorders are usually the first to suffer from polluted or contaminated air, I feel strongly that this plant should not be enlarged.

I realize that sewage treatment plants are necessary, but in this decade and in Lake County, Illinois there are certainly alternatives in areas that are sparsely populated. I am making these comments not only for my patients, but for all people, sick or well, who might be adversely affected by enlargement of the Clavey Road facility.

Sincerely yours,

AAG/ler

Arnold A. Gutman, M.D.
[illegible]
Highland Park, Ill [illegible]

ASSOCIATED ALLERGISTS, LTD.
111 NORTH WABASH AVENUE
SUITE 1518
CHICAGO, ILLINOIS 60602

332-4292

ALLERGY

Norman J. Ehrlich, M.D.
Donald B. Frankel, M.D.
Arnold A. Gutman, M.D.
Angelo E. Falleroni, M.D.
Donald P. Schwartz, M.D.

May 21, 1971

Environmental Protection Agency
Water Quality Office
Room 410
33 West Congress Parkway
Chicago, Illinois 60605

ATTENTION: MR. G. W. SCHENZEL

Dear Mr. Schenzel:

I would like to add my name to the list of physicians in the Highland Park area who oppose enlarging the Clavey Road Treatment Plant.

I am an allergist with an office at 635 Roger Williams Avenue, in Highland Park and I have patients with bronchial asthma and many other respiratory ailments who live in or near the area. Since these patients, especially those suffering from these respiratory disorders are frequently the first to suffer from polluted air, I feel strongly that this plant absolutely should not be enlarged.

Sewage treatment plants are necessary, but there are certainly alternative sites less apt to directly affect those with these respiratory illnesses in areas around Lake County that are less populated. I am strongly opposed to this enlargement not only for the benefit of my patients, but for all those people in the area, whether they are or are not sick, who might also be adversely affected by any enlargement of the Clavey Road facility.

Very truly yours,

Norman J. Ehrlich, M.D.
Chairman & Attending Physician
Department of Allergy
Michael Reese Hospital
Medical Center
Chicago, Illinois

NJE/ler

RABBI ARNOLD JACOB WOLF
STUDY • 1301 CLAVEY ROAD
HIGHLAND PARK, ILLINOIS 60035
TELEPHONE IDLEWOOD 3-3555

May 19, 1971

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U.S. Environmental Protection Agency
Water Quality Office
33 East Congress Pkwy.
Chicago, Ill. 60605

Dear Mr. Schenzel:

As a member of the clergy of Highland Park I co-sponsored a resolution requesting a moratorium on construction of the prepared expansion of the Clavey Road Sewage Treatment Plant. The moratorium was sought so that the proper authorities could make a determination as to a suitable alternate site in a non-residential area and an investigation undertaken as to the potential health hazards of a sewage treatment facility located in a high density residential area.

I have followed the developments in the Clavey Road controversy with great interest and so it was with great satisfaction that I read the recent draft environmental impact statement on the prepared expansion of the Clavey Road plant. As a clergyman whose responsibility is to the community at large and to individual residents of the city of Highland Park, I want to urge that the Environmental Protection Agency stand by its draft limiting the expansion to only 12 million gallons per day.

Further, I endorse the draft in its recommendation that "necessary advanced waste treatment unit processes be provided." I agree that the retention basins be completely covered but I suggest the entire matter of locating retention basins in a residential area be re-evaluated. May I further suggest your agency take a stand in opposition to the effluent lagoon now under construction. What the North Shore Sanitary District has done to that area in construction the effluent lagoon is unconscienable; it has no place in the midst of a residential area containing homes, schools, houses of worship, public park land and hundreds of school age children.

In conclusion, I support the recommendation that a study be initiated to "ascertain the possibility of airborne infection from sewage treatment facilities." Thank you for your cooperation.

Very truly yours,

Rabbi Arnold Jacob Wolf

cc: Mr. William D. Ruckelshaus
Director E.P.A.
Washington, D.C. 20460

North Suburban Synagogue Beth El

1175 SHERIDAN ROAD, HIGHLAND PARK, ILLINOIS 60035 PHONE 432-8900

Samuel H. Dresner
Rabbi

Philip L. Lipis
Rabbi Emeritus

Reuven Frankel
Cantor

Dr. Louis Katzoff
Director of Religious Education

Cyril G. Oldham
Executive Director

Hillel Kliers
Youth Director

May 19, 1971

Mr. Gary Schenzel
U.S. Environmental Protection Agency
Water Quality Office
33 East Congress Parkway
Chicago, Illinois 60605

Dear Mr. Schenzel:

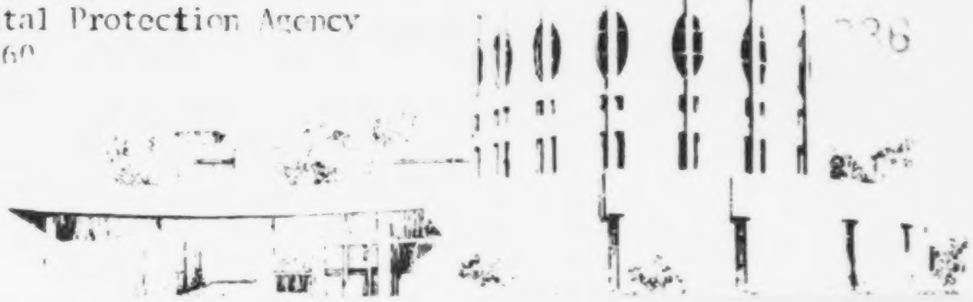
Some months ago members of the clergy in Highland Park and other interested persons requested a moratorium on plans to expand the Clavey Road Sewage Treatment Plant. We were concerned that an alternate site in an area which was non-residential would be chosen to situate a sewage treatment plant in view of the health dangers involved.

I was pleased to note the statement from your office, therefore, regarding the Clavey Road Plant, and am writing to you to indicate my strong feelings about the necessity in limiting the expansion of this plant to twelve million gallons per day, as your office indicated. That "necessary waste treatment unit processes be provided," I further think of great importance, as well as the item covering the retention basins. The building of an effluent lagoon in a residential area by the North Shore Sanitary District is difficult in the extreme to comprehend. Your suggestion that a study be initiated to 'ascertain the possibility of air-borne infection from sewage treatment facilities" should furthermore be an item of highest priority.

Sincerely yours,

Samuel H. Dresner
Rabbi

SHD/jrc
cc: Mr. William D. Ruckelshaus
Director, Environmental Protection Agency
Washington, D.C. 20460



NORTH SHORE RADIOLOGISTS, S. C.
2500 RIDGE AVE., SUITE 203
EVANSTON, ILLINOIS 60201
TELEPHONE 869-4660

RICHARD C. TURBIN, M.D.
MARTIN BERKOWITZ, M.D.

May 17, 1971

Environmental Protection Agency
Water Quality Office
Room 410
334 W. Congress Parkway
Chicago, Illinois 60605

Mr. Gary W. Schenzel
Water Resources Planner
Planning Branch

RE: Clavey Road S.T.P.
Federal Water Quality Office
Environmental Draft

Dear Mr. Schenzel:

I have before me a copy of your Clavey Road draft. I support these measures and urge that they be implemented.

I feel that a 12 MGD plant is still too large, and that a definite health risk potential exists. As the draft apparently represents the only effective counter measure to the plans of the North Shore Sanitary District, I give it my full support.

Very truly yours,

Richard C. Turbin, M.D.

RCT:ds

cc: Amos Turner, P.E.

Mr. & Mrs. Roy Slovenko
500 Highland Place
Highland Park, Ill. 60035
May 17, 1971

Mr. Gary A. Schenzel
Water Resources Planner
E.P.A. Water Quality Office
Chicago, Ill.

Dear Mr. Schenzel:

Too long have we waited for a truly objective study of the Clavey Road Sewage Treatment Plant embracing a total view of the Great Lakes Water Quality Control Problem.

We commend your preliminary report and urge you to protect its scientific findings against local greed and misinformation. We urge that this plant be phased out quickly.

Very sincerely yours,

Roy Slovenko

MRS. MARSHALL FINKELMAN
335 LARKSPUR, HIGHLAND PARK, ILLINOIS 60035

Dear Mr Schengl,-

I Have waited so long for a truly objective study of Clavey Road STP embracing a grand view of Great Lakes Water Quality Control Problems. I commend your preliminary report and urge you to protect its scientific findings against local greed and mis-information. I urge this plant to be phased out quickly.

Sincerely,

Mrs. Marshall C. Finkelman
May 14, 1971

OFFICE OF THE CHAIRMAN
Board of Supervisors
County Building, Lake County
Waukegan, Illinois 60085

May 10,1971

Mr. Amos Turner, P.E.
Director
Lake Michigan Protectors of
the Environment,Inc.
360 Charal Lane
Highland Park,Illinois 60035

Dear Mr. Turner:

I thank you for the (FWQO) draft that you enclosed in your letter of May 3rd.

In order that members be kept informed, I am making the draft available to our Public Works Committee.

Thanking you, I am

Sincerely yours,

Ronald R. Coles

Ronald R. Coles,Chairman
Board of Supervisors

RRC.d

VILLAGE OF SCHILLER PARK
COOK COUNTY, ILLINOIS

RESOLUTION

WHEREAS, it has come to the attention of the President and Board of Trustees of the Village of Schiller Park that the North Shore Sanitary District Clavey Road Plant in Highland Park is being expanded and the effluent therefrom going into the Des Plaines River will receive only secondary rather than tertiary treatment; and

WHEREAS, after July 1, 1972, all effluent discharged into Lake Michigan and the Skokie River must receive tertiary treatment and there is no good and sufficient reason why effluent discharged into the Des Plaines River should not also receive tertiarytreatment, and

WHEREAS, the dumping of such effluent and the increase in volume into and through the Des Plaines River will constitute a grave hazard to the public health and welfare of the residents of those suburbs, including the Village of Schiller Park, through which the Des Plaines River flows.

BE IT THEREFORE RESOLVED by the Village of Schiller Park that the Village does formally protest the proposed plans of the North Shore Sanitary District to flush only secondarily treated effluent into the Des Plaines River and that the Illinois Pollution Control Board be and herewith is memorialized to resist the plans of the North Shore Sanitary District aforesaid and that equal to the Skokie River and Lake Michigan and thus prevent the discharging into the Des Plaines River of any effluent that has not received tertiary treatment.

APPROVED this 29th day of April, 1971.

Approved:
Edward Bluthardt
President

Attest:

Walter Bykowski
Clerk

n Franklin Park, Illinois.

3700 Hawthorn St.
Schiller Park, Ill.

May 8, 1971

Mr. F. T. Mayo,
Interim Reg. Dir.,
Water Quality Office,
U.S. Environmental Protection Agency,

Dear Mr. Mayo,

Please include the enclosed resolution with the Draft of the Assessment of the Environmental Impact of the N.S.S.D. Clavey Rd. Plant on the DesPlaines River.

Enclosure: Protest Resolution passed by the Village Bd. of Schiller Park on April 29, 1971 as published in the Schiller Park Independent.

Sincerely,
Mary M. Oddson

678-6864
Mary M. Oddson

430 Clavey Lane
Highland Park, Ill.

From The Desk Of

BARBARA VOLIN

May 11, 1971

Dear Mr. Schenzel;

We have written our senators & our congressman asking them to support your recommendations concerning Lake Michigan & the Clavey sewerage plant. Yours was the only balanced and impartial study.

Mr & Mrs. Hilliard Volin

1210 Gregory Street
Wilmette, Illinois
60091

May 4, 1971

The Honorable Francis Mayo
Water Quality Division
U.S. Environmental Protection Agency
33 East Congress
Chicago, Ill. 60606

Dear Mr. Mayo:

The month of discussion and final decision as to the capacity of the Clavey Rd. plant is Apr. 23 to May 23, 1971. Many of us in conservationist groups would like to have this plant expanded much more for future needs lest the proposed "compromise" plant will be very slow in implementation, and not realized until 1975 or later.

If you believe with us that this expansion is the easiest and the most economical, and there is anything we can do, please contact us. An encouraging word from you would help.

Sincerely,

(Mrs. L. T.) Laura S. Wyly

Sent to Mayo for ans due 5/20

[illegible]

April 27, 1971

Mr. William D. Ruckelshaus
Administrator
U.S. Environmental Protection Agency
1626 K St. N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus,

I feel that it was a great mistake that the Federal government overruled the Illinois Pollution Control Agency in the Clavey Road sewage treatment affair. Construction has been held up for 2 years by 200 people while 5.5 million others watch Lake Michigan get more and more polluted Because of this federal decision, Highland Park is going to continue to discharge its sewage into Lake Michigan for 2 to 5 years longer, an inexcusable delay. The cost will be higher. Finally, the federal government should not intervene when the state is doing a responsible job

I hope you will reconsider your action.

Sincerely,

Mrs Robert Pfutzenreuter

Mrs. Robert Pfutzenreuter
727 Linden Ave.
Wilmette, Ill. 60091

Copy to: Francis Mayo

125 Maple Ave.
Highland Park, Ill.,60035

May 9, 1971

Environmental Protection Agency
Water Quality Office
Room 410
33 W. Congress Parkway
Chicago, Il.,60605

Attn: Mr. Gary W. Schenzel

Gentlemen:

PLEASE do not listen to the disruptive voices calling themselves "Lake Michigan Protectors of the Environment". "Protectors" indeed!!!

This group seizes any name appropriate. When S.A.V.E. began(and still exists) as a thoughtful legitimate environmentally concerned group - this other (the disruptive ones) called themselves,"Save Highland Park" - capitalizing on another group's good name.

Now that there is a responsible group called, "The Lake Michigan Federation," this above group is writing letters asking us to write you and calling itself "Lake Michigan Protectors etc..."

Highland Park and The North Shore Sanitary Dist. have spent a long time agonizing a formula. Now the Clavey Rd. plant is going ahead.

At last, we, who place above all other issues, the saving of Lake Michigan, thought the difficulties were ironed out.

Now, your office comes along, just when peace was begining (we thought) - your office comes along and wants to change the formula. You have let both sides start the fight all over again. WHY????

Please, let peace reign. Let the formula alone. Let everyone procede as before and try to save Lake Michigan before its too late.

There are a few voices like the above mentioned group - but I'm sure from reading election returns and votes for bond issues that the above do not speak for the great majority of North Shore people who wish above all else to save our most important natural resource, the Lake.

Sincerely yours

Marjorie & RL Ettlinger

Mr. & Mrs. R. L. Ettlinger

NORTHWESTERN UNIVERSITY
CHICAGO, ILLINOIS 60611

THE MEDICAL SCHOOL
Ward Memorial Building
303 E. Chicago Ave

May 10, 1971

Environmental Protection Agency
Water Quality Office
Room 410
33 West Congress Parkway
Chicago, Illinois 60605

Attn: Mr. Gary W. Schenzel
Water Resources Planner
Planning Branch

Dear Mr. Schenzel:

I should like to vigorously support the Draft Proposal of your office regarding the Clavey Road Sewage Treatment Plant. It is a far-sighted solution assuring not only the maximum in safety but the maximum in efficiency of sewage treatment for Southeast Lake County.

Sincerely yours,

Jack Arbit, Ph.D.
Associate Professor
Director of Graduate Education
(Psychology)
Department of Psychiatry

JA:ko

bernheim kahn+associates
architects
(312) 236-1333
ONE NORTH WACKER DRIVE CHICAGO, ILLINOIS 60606

fred l. bernheim, a r a
lawrence i. kahn, a i a
adrian lozano, a i a, s t a
elmer nielsen

MAY 21, 1971

US. ENVIRONMENTAL
PROTECTION AGENCY

GENTLEMEN -

JUST WHOM ARE YOU ATTEMPTING TO PROTECT AND SATISFY? THOSE WHO SHOUT & SCREAM THAT THEIR LIVES AND PROPERTY ARE IN DANGER -

THE FEDERAL RECOMMENDATIONS TO REDUCE THE CLAVEY RD. TREATMENT PLANT TO 12 MILLION GALLONS IS LUDICROUS - IT IS NOW OVERLOADED AT 4 MILLION GALLONS - PLANS FOR AN 18 MILLION GALLON PLANT AT CLAVEY WITH A FUTURE PLANT ON THE DES PLAINES RIVER, IS THE PROPER APPROACH TO SATISFY THE COUNTIES NEEDS - MUST ALL OF US SUFFER THE LOSS OF LAKE MICHIGAN FOR "MORE YEARS" BECAUSE OF AN "EMOTIONAL" GROUP - LETS BE "DEMOCRATIC" ABOUT IT AND LOOK AT THE ENTIRE PICTURE

VERY TRULY YOURS,

103 GREEN BAY RD
HIGHLAND PARK - ILL.

Lawrence I Kahn

olin e. freedman, consultant, graphic communications industry

264 CENTRAL AVENUE
HIGHLAND PARK, ILLINOIS
MAY 20, 1971

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION V
33 EAST CONGRESS PARKWAY
CHICAGO, ILLINOIS 60605

GENTLEMEN:

HAVING LIVED WITHIN 1 MILES OF THE SHORES LAKE MICHIGAN FOR ALMOST 30 YEARS I WISH TO EXPRESS MY DISPLEASURE WITH FURTHER REGULATIONS WHICH INTERFERE WITH CLEANING UP HIGHLAND PARK BEACHES. I VIEW THE RECOMMENDATIONS OF YOUR COMMUNICATIONS TO CHANGE THE DESIGN BASIS OF THE NORTH SHORE SANITARY DISTRICT PLANT ON CLAVEY ROAD AS PARTICULARLY IRRITATING – A MERE SOP TO A HANDFUL OF LOCAL RESIDENTS WHO ENJOY A DISPROPORTIONATE LEVEL OF PUBLICITY FOR THEIR ILL FOUNDED COMPLAINTS AND EXPANSION OF THE CLAVEY SEWAGE TREATMENT PLANT. YOUR PROPOSALS SATISFY NO ONE – BUT DELAY CLEANING UP THE LAKE.

I WISH TO EXPRESS MY WISH THAT YOU ACCEPT THE PROPOSED DESIGN SO WE CAN GET ON WITH THE JOB OF OPENING OUR BEACHES IN ANOTHER YEAR OR TWO.

YOURS TRULY,

[illegible]

LESTER SCHWARTZ, M.D.

LESTER SCHWARTZ, M. D.
228 Aspen Lane
Highland Park, Illinois 60035

5/20/71

U. S. Envianmental Protective Agency - Region V
33 East Congress Parkway
Chicago, Illinois 60605

Dear Sirs:

I hope that you will have time to read this letter in its entirety. I moved to Highland Park two years ago after we inquired in the City Hall as to the type and nuisance value of the plant in our backyard. We were informed that it was a well runned sewage plant with NO local problems. We were then issued a strict building permit and felt assured that with all the regulations placed on our building (home) no city would allow a "pollution plant" in our backyard.

A smell is like a husband or wife. You don't know what you have until you live with them. It IS horrible! I have appeared in Highland Park City meetings, the Illinois Water Polution Control Meetings and several times before judges in the

LESTER SCHWARTZ, M.D.

91 | Lester Schwartz, M. D. | :NUE
226 Aspen Lane
Highland Park, Ill. 60035 | 7

REGENT-4-2121

:AKE COUNTY MUNICIPAL COURTS. I WAS THOUROUGHLY AMAZED AT:

1) THE IGNORANCE of Mayor LAWTON WHO APPROVED THE INITIAL EXPANSION TO 22 MILLION GAL/DAY. HE BLATENTLY STATE AT THE ILLINOIS WATERWAY BOARD MEETING IN 1969 THAT HE WAS UN AWARE THAT THE plant WAS TO SERVICE NORTH CHICAGO, LAKE FOREST, HIGHWOOD, HIGHLAND PARK AND A few OTHER INSUNDERY COMMUNITIES FOR DELIVERING THE plant TO THE "DULY ELECTED AND APPOINTED Officials of LAKE County", HE WAS PROMOTED TO VICE CHAIRMAN of THE ILLINOIS POLUTION BOARD.

2) THE BLATENT DISREGARD of LEGAL COMMITTE'S BY THE NORTH SHORE SANITARY DISTRICT WAS SEEMINGLY ~~IGNORED~~ PREFORMED. THE N.SS.D. WAS ORDERED BY THE ILLINOIS AIR POLUTION BOARD TO STOP POLLUTING THE AIR.

3) THE LACK of HONEST JUDGES IN LAKE COUNTY (WHO ARE APPOINTED BY MAYOR SEBASIAN TO THE TICKET) IS AMAZING. WHEN I TESTIFIED BEFORE THEM, THEY WERE MORE INTERESTED IN THE FORM of THE QUESTIONS ASKED BY THE OPPOSING LAWYERS, RATHER THAN THE CONTENT of EXPERT TESTIMONY (THEY STRICKENED VITAL information ABOUT HEALTH HAZARDS!)

251 4) THE N.S.S.D VIOLATED THE SAFETY of THE

LESTER SCHWARTZ, M.D.
91 NUE
7
Lester Schwartz, M. D.
226 Aspen Lane
Highland Park, Ill. 60035

RESIDENTS LIVING IN THE IMMEDIATE AREA BY ALLOWING THE CONTRACTORS FOR THE BUILDING TO BURN 20 to 30 CORDS of LUMBER, WHICH LATER REQUIRED THE SERVICES of THE FIRE DEPT. TO EXTINGUISH IT (1970 - June approx.)

5) IT WAS I WHO PROPOSED a) COVERING THE CESSPOOLS - SEDIMENTATION TANKS

b) LIMITING THE SIZE TO HIGHLAND PARK,

c) MONITORING THE AIR for POLLUTANTS.

I AM NOT LOOKING FOR FLOWERS! I JUST WANT TO KNOW WHY THE EXPERTS of THE ILLINOIS SANITATION BOARDS DUE NOT REQUIRE MINIMAL HEALTH STANDARDS for THE RESIDENTS LIVING IN PROXIMITY TO THESE POTENTIAL HAZARDS (VIRUSES, MOSQUITOES, FLIES, BACTERIAL SPREAD, CONTAMINATION of AIR WITH SO_2, CO, H_2S - ALL DANGEROUS GASSES AND DUMPING of ~~[illegible]~~ INCOMPLETELY TREATED SEWAGE INTO THE WATERWAYS of ILLINOIS).

I BESEACH YOU TO SET UP A FEDERAL STANDARD FOR BUILDING AND DISPOSAL of BY PRODUCTS of SEWAGE.

Despite my lack of Time, I'd BE HAPPY TO ASSIST YOU FREE IN ANY MANNER.

Lester Schwartz, MD CLINICAL ASST. Prof. - U of I

Mrs. Emanuel Winston
871 Marion Avenue
Highland Park, Illinois 60035

May 22, 1971

Mr. Gary Schenzel
U.S. Environmental Protection Agency
Region V
33 East Congress Parkway
Chicago, Illinois 60605

Dear Mr. Schenzel,

Ordinary citizens seem to stand back in awe when the experts of the federal government take over the investigation of a problem, especially a technical one. I wish the politicians would do the same. It seems obvious to me the pressures your preliminary draft received, had other motivation than the desire to see the best technical, ecologically sound, long-range solution.

As one of the members of the Committee to Save Highland Park who was involved in the technical aspect of this problem, I studied all the documentation and tried to educate our city with the facts. A frustrating task, as it seemed from the inside the true story was never accurately reported at each juncture.

We gave our hearts to the effort to convince the city to fight for Highland Park's welfare. Too little, too late they begin to accede to and make resolutions opposing, each defect in the District's plan. I think by the time the plant is completed everyone will agree it shouldn't have been built here. It is as if they must maintain the dignity of judgments previously made, especilly that of our former mayor, now a member of the Illinois Pollution Control Board.

The District fights desperately to save its original plans even as the experts prove the defects, all the while wasting our money and time for the Lake. The Lake County political representatives give powerful vocal support to the District, without seeming to have read your report. Perhaps I am naive but I don't understand why, or who has what to gain.

The Illinois Pollution Control Board, an honorable body but political appointees rather than experts in the technology in ecology, holds a hearing which seemed a mockery to me and issued a report whose legality is being questioned by both sides.

Mr. Schenzel, your report was beautifully and masterfully done. I can't understand the statements by its vocal opposition, such as Mrs. Rome of the Illinois League of Women Voters, unless they didn't read it. You convincingly covered every point and some heretofore uninvestigated, long-range considerations, like the ultimate effect of the diversion on the watershed and the possible changes in the biota of the Skokie river and lagoon system.. You have taken into account the needs of all Lake County and have met the Lake deadline. I applaud your report and pray the final draft is as strong if not stronger.

For I take a stronger stand than you. Where we live on Marion Avenue, the plant you envision would probably be safe for us. However, not if the North Shore Sanitary District is running it. Even under intense public scrutiny for the past four years, they have made no effort to modify the proven air pollution or improve their housekeeping - all the while claiming, "we're overloaded, give us money to enlarge and we'll be good boys." This past summer they were not overloaded and still had many days of air pollution. In their meetings they make statements such as "Some day we're going back to Highland Park, and, by God, we're going to get them." And, in spite of the 18 million gallon aggrement with the city, prohibiting future land purchase in Highland Park, "If we need more land, we'll buy it."

Your report has acknowledged the possibility of health hazards the extent of which is unknown. Monitoring all possible air pollution will not stop it. We do not wish to be the guinea pigs used the study the effects of sewage treatment plant air pollution, on a densely residential area.

Our Committee's original goal was to have the present plant modified to control air pollution/but not expanded, to serve Highland Park and our lakefront plants only,/as soon as possible. However, when your first cost feasibility/study envisioned a 30 MGD plant at an industrial site on the Des Plaines River and eventual phasing out of Clavey, this was the ideal solution. But, it would be economically feasible only if Clavey was never expanded to 12 MGD at a cost of $10-20,000. Therefore, our proposal to strongly counter the opposing political pressure is:

1. If the NSSD would agree to the 30 MGD plant at Des Plaines...
2. If they would build Gurnee with as much speed as they're putting into Clavey, to remove the industrial sewage from the north, including North Chicago.
3. If they would improve, but not expand, Clavey in:
   a. Capacity - by coagulant chemicals
   b. Air Pollution abatement - by proper devices and improved housekeeping or "state of the art"
   c. Demonstrate the desire to serve us and help us - instead of "get us".
4. We would accept the present capacity, especially since residential sewage could be more efficiently processed, accept the possibility of overload for the 3-5 years until the Des Plaines 30 MGD plant is completed and Clavey phased out.
5. We would accept the lakefront diversion as soon as humanly possible thereby meeting or advancing the "save the lake" time schedule.
6. We would, of course, drop our lawsuits to save them and ourselves money.

Please,Mr. Schenzel, accept the courage of our convictions. We were in awe of our government or apathetic, but we've gotten involved at great physical and emotional expense. Please use the full force of the federal government to oppose the local, county, and state political pressure. Write a strong final report for ecologically long range solution that is safe for people.

Sincerely,

Gail Winston

Mrs. Emanuel Winston

May 13, 1971
1111 Manchester Ave.
Westchester, Ill.
60153

Dear Gentlemen,

Please do not let the Sanitary District throw sewage into the Desplains river and lake Michigan I don't want to drink sewage. I want to drink clean water. I might be only a sixth grader but I still care. Thank you

Sincerly yours,
Joel Kelley

190 Pine Point Dr.
Highland Park, Ill.
May 19, 1971

U.S. Environmental Protection Agency
Region 5
33 East Congress Parkway
Chicago, Illinois.

Gentlemen:

My husband and I are very much in favor of settling the Clavey sewage plant business in Highland Park by adopting the Federal Office recommendations.

Please, 12 m. gallons – not 18 million!
Please cover retention basin!
Please build a larger plant at des Plaines River!

We are strongly in favor of the Federal Water Quality Office's recommendations!

Yours very truly
Shirley Fields

Hal M. Brown
3333 Greenbriar Road
Deerfield, Illinois 60015

May 17, 1971

Water Quality Office, Region V
Federal Environmental Protection Agency
33 East Congress Street
Chicago, Illinois

Re: Draft Environmental Impact Statement for
Sewage Project No. WPC-Ill. 754 Submitted
by North Shore Sanitary District, Waukegan,
Illinois

Dear Sirs:

I have the following comments with respect to certain conclusions drawn in the above captioned environmental impact study relating to the recommendation to advise the North Shore Sanitary District to build a sewage treatment facility on the Des Plaines River.

1. The recommendation that the North Shore Sanitary District build an additional facility on the Des Plaines River is not supported by the Environmental Impact Statement, but appears to be designed to quiet objections voiced by residents of the area surrounding the present Clavey Road plant. The statement states that the Des Plaines River is already subject to severe pollution. The statement (see page 13) that a more desirable ecosystem may result from an increased flow into the Des Plaines River is pure conjecture. Furthermore, an increased flow of 18 MGD (28CFS) of effluent into the Skokie River would have less of an adverse effect on that stream than a similar flow into the Des Plaines River. This conclusion appears in the report itself on page 16.

2. While possibly alleviating some of the distress caused to residents of the Clavey Road plant area, the plant on the Des Plaines River would cause similar problems and dissatisfaction to residents near the Des Plaines River site. In addition, it should be noted that the proposed Des Plaines River site (in contrast to the proposed site at Roundout) is not within the present or proposed boundaries of the North Shore Sanitary District. A plant on the Des Plaines

River would result in lessening of property values and physical discomfort to persons who in no way would benefit from the construction of such a plant.

3. The construction of the Des Plaines River site will also cause severe temporary disruption to the residents in the surrounding area during the construction period. The site discussed for the area near Roundout (apparently an industrialized area) was not considered because it would cost approximately $1,000,000 to $3,000,000 more than the Des Plaines River site (an area containing many homes). There is apparently no problem with respect to asking the sanitary district to spend approximately $19,000,000 more to build an 18 MGD plant at Des Plaines rather than at Clavey Road.

In conclusion, for the reasons stated above, I believe the draft impact study should be changed to recommend additional facilities for the North Shore Sanitary District in an area other than the Des Plaines River site proposed in the draft study.

Very truly yours,

Hal M. Brown

May 20 - 1971

H. BOWEN STAIR

899 KIMBALL ROAD, HIGHLAND PARK, ILLINOIS 60035

U. S. Environmental Protection Agency -

Dear Sirs -

This statement is in opposition to the Preliminary Draft of your report relative to the North Shore Sanitary District's Clavey Road sewage treatment plant. Any further delay in the completion of the District's plan to increase the capacity of that plant to 18 million gallons can be a major cause of serious degradation in the ecology of Lake Michigan. Please see the Brief As Amicus Curiae of Businessmen For the Public Interest before the Illinois Pollution Control Board. To their position I subscribe.

Yours truly

H Bowen Stair

May 24, 1971

Mr. Gary Schenzel
Water Resources Planner
E.P.A. Water Quality Office Rm. 410
33 W. Congress Parkway
Chicago, Ill. 60605

Dear Gary,

Under separate cover members of the Lake Michigan Protectors of the Environment have already submitted - or will submit - comments on the draft environmental impact statement on the North Shore Sanitary District's proposed expansion plans. These comments cover the technical, engineering and microbiological aspects of the project and are fully endorsed and supported by the entire membership of the Lake Michigan Protectors of the Environment.

In addition the Society against Violence to the Environment (SAVE) and the Campaign Against Pollution (CAP) have endorsed the F W Q A's draft environmental statement as has the board of School District 108 in Highland Park. Furthermore, various members of the Highland Park clergy also have endorsed the draft statement. It is rather significant that independent organizations and individuals have seen fit to add their support of the draft statement.

The controversy over the proposed expansion of the Clavey Road sewage treatment plant has raged for over two years. In all this time the Trustees of the North Shore Sanitary District have rigidly refused to listen to reasonable compromise and to modify their thinking and plans in accordance with superior technology. Their inflexibility and stubborn advocacy of out-moded plans and techniques has caused the present quagmire:

A. The City of Highland Park has requested removal of the effluent lagoon -- denied by the North Shore Sanitary District.
B. Reduction and covering of retention basins - denied by the North Shore Sanitary District.
C. The State of Illinois insists on advanced water treatment processes - denied by the North Shore Sanitary District.
D. The F W Q A draft statement recommends a 12 M G D plant -- denied by the North Shore Sanitary District.
E. Requests for a search and study of alternate sites -- denied by the North Shore Sanitary District.
F. Requests for the ultimate phase-out of Clavey -- denied by the North Shore Sanitary District.

This arbitrary, selfish, narrow-minded dogmatic intransigence has caused serious business and commercial problems in Lake County as evidenced by the petitions to intervene of the Lake County Contractors Association and the Lake County Home Builders Association, the Waukegan - North Chicago Chamber of Commerce, the Lake County Building Trades Council and the Zion-Benton Chamber of Commerce. This illustrates the economic hardships caused by the North Shore Sanitary District's adamant and rigid position.

Mr. Gary Schenzel
Chicago, Ill. 60605

The Lake Michigan Protectors of the Environment endorses the recommendations of the FWQA in their entirety - with one major exception. In our judgment the size of the plant should be limited to 6 MGD as detailed in Mr. Turner's engineering and technical report.

A. We endorse the covering of the retention basins and the re-evaluation of the proposed capacity.
B. We endorse the recommendation for a new facility of 18 MGD on the Des Plaines river.
C. We endorse the request that the NSSD "limit environmental damage during construction and restore disrupted areas to their former condition".
D. We endorse the recommendation that the NSSD "landscape the facilities in order minimize the environmental impact on neighboring areas".
E. We endorse the recommendation of a broad study of the "environmental consequences of diversions of water from one watershed to another".
F. The recommendation that a study be initiated under controlled conditions to "ascertain the possibility of airborne infection from sewage treatment facilities", is totally and strongly endorsed by our citizens group. This is a tremendous opportunity for the Federal Government to perform an outstanding service not only to the residents in the immediate area surrounding the Clavey plant but an opportunity to perform a service for humanity. There is a desperate need for such a study -- it is immoral and unconscionable that thousands of us - especially our children -- must serve as human guinea pigs.
G. We urge that the FWQA insist on the removal of the effluent lagoon from the Clavey Road area. Simply this is a horror that must not be visited on the neighborhood, the community, ourselves and our posterity.

As private citizens our health and welfare -- and even more importantly the health and welfare of our children -- should and must be of paramount concern to the FWQA and ultimately the EPA. As private citizens we are concerned with the present and future use and enjoyment of Lake Michigan as a national water resource treasure and so, too, the FWQA must be concerned with the Lake and its present and future use and enjoyment by all citizens. The final decision of the EPA must weigh both the environmental and the ecological degradation spawned by the North Shore Sanitary District's obstinate and obdurate rejection of all reasonable solutions. We must remind the Federal authorities that their basic responsibility is to the health and welfare of the human beings involved. Simple justice demands nothing less.

Cordially,

Gerald Surell

GERALD L. SURELL
LAKE MICHIGAN PROTECTORS OF
THE ENVIRONMENT
178 Aspen Lane
Highland Park, Ill. 60035

gs/jhm

HERBERT A. LOEB, III
370 HASTINGS AVENUE
HIGHLAND PARK, ILLINOIS 60035
AREA 312/432-0002

5-26-71

Mr. William Ruckelshaus
Director
Environmental Protection Agency
Washington, D. C.

Dear Mr. Ruckelshaus:

With reference to the Clavey Road Sewage Treatment Plant (I live about .6 miles from the plant), I urge that:

1) The existing plant not be enlarged and that plans be made for eventual phasing out of the plant.

2) The plant be landscaped properly, to avoid any further damage to the environment.

3) That the effluent lagoon construction be stopped at once, since tertiary treatment will supplant it.

4) That any construction which is done in the future be handled in a manner which reduces environmental damage. Enough damage has been done already.

5) That a plant be constructed, starting at once, on the Des Plaines river, of a size that will enable phaseout of the Clavey plant.

6) That the retention basin at Clavey be covered.

We appreciate the interest that the E.P.A. has taken in this matter, with special appreciation for the attention given the immediate neighbors of this plant. Yours is the first governmental body to have shown evidence that protection of these people was an important factor.

Thank you.

Yours truly,
Herbert A. Loeb, III

CC: Mr. Gary Schenzel
Sen. Charles Percy
Sen. Adlai Stevenson
Gov. Richard Ogilvy

[redacted]

LEAGUE OF WOMEN VOTERS OF HIGHLAND PARK

FOR IMMEDIATE RELEASE

STATEMENT TO CITY COUNCIL - May 10, 1971
RE: BAN ON NEW SEWER HOOK-UPS TO NSSD

While we are aware of the serious ramifications of our position, the League of Women Voters believes that directing any additional sewage to the already overburdened Clavey Road Sewage Treatment Plant, or necessitating the dumping of additional, inadequately treated sewage into Lake Michigan, would constitute an environmental and health hazard which cannot be tolerated.

Unless and until the NSSD can provide interim facilities to increase its capacity to treat additional sewage -- facilities which would be acceptable within the constraints of environmental protection -- we oppose the issuance of permits for new sewer hookups.

We respectfully request that the City of Highland Park reconsider its action to exclude single family dwellings from the ban imposed by the Illinois Pollution Control Board, with the exception of those homes already under construction. We feel that to allow additional connections, and to urge other municipalities to do likewise, will create a further "hardship" on the people of Highland Park which balances or exceeds the hardship on those to whom permits will be denied. The use of Lake Michigan is now denied to us all; the Skokie Lagoon has become a cesspool; and the NSSD has claimed that overloading of the Clavey Road plant has been responsible for odors and malfunction.

There is an enormous potential for single family development in the area served by the NSSD which must be postponed until the facilities are adequate to receive the additional sewage generated!

cc: City Council, Highland Park
Trustees, NSSD
City of Lake Bluff
City of Lake Forest
Illinois Pollution Control Board
Highland Park News, Highland Park Life, Waukegan-News Sun

Illinois Pollution Control Board
League of Women Voters of Illinois
" " " " " Lake Bluff
" " " " " Lake Forest

ENVIRONMENTAL PROTECTION AGENCY
WQO REGION V
MAY 17 10 54 AM '71
263

Village of Hodgkins
Office of the President
8990 Lyons Street
HODGKINS, ILLINOIS 60527

May 12, 1971

Mr. Francis T. Mays
Interim Regional Director
Water Quality Office
U. S. Environmental Protection Agency
33 East Congress Parkway
Chicago, Illinois 60605

Dear Sir:

As the Village President of the Village of Hodgkins I am writing your office stating the Village of Hodgkins views on the new sewage disposal plants.

I wish to go on record that we violently oppose under any conditions the dumping or disposing of anything into the Des Plaines River.

Our village is located adjacent to the Des Plaines River and are very much concerned about any chance of a flooding condition. This, I feel, will be greatly increased with the suggested methods as outlined in the attached newspaper article.

The Santa Fe Railroad has many acres available for future industrial expansion in this area, any threat of a flooding condition would be very detrimental to the economy of the railroad and the Village of Hodgkins.

Thanking you, in advance, for presenting my letter to the proper authorities.

Yours truly,

Leon A Cook
Leon A. Cook
Village President

LAC:bb

cc: Mayor Michael Coduto, Countryside, Illinois
Mr. Merle Anholt, The Atchison, Topeka & Santa Fe

DONALD N. MANN
ATTORNEY AT LAW
111 SOUTH DEERE PARK DRIVE
HIGHLAND PARK, ILLINOIS 60035
IDLEWOOD 3-3305

May 19, 1971

Enviromental Protection Agency
Water Quality Office
Room 410
33 West Congress Parkway
Chicago, Illinois 60605

ATT: Mr. Gary W. Schenzel
Water Resources Planner - Planning Branch

Dear Mr. Schenzel:

By action of the Board of Directors of the Deere Park Neighborhood Assoc., taken on Wednesday, May 19, 1971 we wish to go on record as favoring the FEDERAL WATER QUALITY OFFICE draft as to the matter on Clavey Road in Highland Park, Illinois.

We believe such action is necessary to preserve not only the community but also the total ecology of the area.

We offer our support and help in anyway possible.

For the BOARD OF DIRECTORS DEERE PARK. NEHBRHD. ASSOC.

BY Donald N. Mann
DONALD N. MANN PRESIDENT

Riverside Lawn Improvement Association

3748 Stanley, Riverside, Ill. 60546

PRESIDENT
R. Sabbagh

VICE PRESIDENT
L. Becker

SECRETARY
J. Regnier

TREASURER
B. Macht

May 20, 1971

Mr. Gary Schenzel
U. S. Environmental Protection Agency
1819 W. Pershing Road
Chicago, Illinois

Dear Mr. Schenzel:

Re: Sewage Treatment Plant Construction on DesPlaines River at Cook-Lake County line

The people of Riverside Lawn are opposed to the proposal by your agency that effluent from the North Shore Sanitary District be dumped into the DesPlaines River.

Riverside Lawn is an unincorporated community located in Riverside Township and surrounded on three sides by the DesPlaines River. Because of this location we are vulnerable to flooding caused by ice jams, spring thaws or periods of heavy rain. This flooding brings with it any sewage, oil, debris and other forms of filth that have been discharged into the river by combined sewers, industry and sanitary districts located upstream of Hoffman Dam. Over the years this problem has increased to the point where we feel it will become a serious threat to our welfare to place any additional effluent into the DesPlaines.

At this time we are considering application to the Federal Housing and Urban Development for subsidized flood insurance. Insurance at any cost can never remove the miseries of flooded property, but we see no logic in the federal government placing our homes in jeopardy and then offering to pay for damages.

Sincerely,

Jane Regnier

Mrs. Bernard J. Regnier
Secretary

17639 DUNDEE ROAD
HOMEWOOD, ILLINOIS 60430
312/798-5674

May 24, 1971

Mr. Gary W. Schenzel
Water Quality Office of United States
Environmental Protection Agency
33 East Congress Street
Chicago, Illinois 60605

Dear Mr. Schenzel:

RE: HIGHLAND PARK, ILLINOIS
CLAVEY ROAD WASTE TREATMENT PLANT

The Illinois EAA has with uncommon wisdom recommended the use of chemical coagulation to improve the efficiency and throughput of the above conventional activated sludge plant. We propose that consideration be given to the use of a thoroughly proved unique chemical-biological treatment that improves the operation of the primary, secondary, final and digester. The fundamental physical chemistry supporting the approach was developed through basic studies at IITRI by the undersigned. Variations of the process have been utilized in hundreds of industrial applications. More recently the process was adopted for sanitary use in a 15-month plant demonstration study. The demonstration was monitored by both the federal and state EPA. The system can be readily adapted to existing plants. The day-to-day plant operation has proved to be relatively simplistic and requires a minimum of semi-skilled control over broad operating conditions.

The following is a simplified technical discussion on the process. The unique combination of commercially available coagulants separate suspended matter, colloids, and a large percentage of complexed soluble substrate from the aqueous phase. The rationale for this step is supported by the fact that before microorganisms can utilize solid phase nutrient, a series of enzymes specific to a given waste must be generated and utilized by the microorganisms. The generation of specific enzymes by microorganisms is time consuming. Enzyme generation is accountable, to a major degree, for the low efficiency of conventional plants. By removing the difficult to break down suspended and colloidal solids in the primary, only soluble substrate enters the secondary. Solubilized nutrient can be rapidly and efficiently utilized by bacteria. The solid phase materials are transferred to the digester where the slower enzymatic reactions can take place with no opportunity for escape to the receiving body of water.

It has been plant proved that suspended, colloidal and a large fraction of the complexed soluble substrate can be removed in the primary by a unique complementary combination of chemicals. The use of conventional coagulants, such as iron and aluminum salts, will improve to a lesser degree the solids removal rate in the primary. The common metal salts function effectively within narrow parameters that require skillful testing and close process control -- even then their performance has proved erratic and relatively inefficient on a cost-effective basis.

A split feed permitting addition of the unique combination of coagulants to the final settling basin increases the floc size and density. This action improves the rise rate capability of the settling basin in the same manner as in the primary settling basin. Experience teaches that the rise rate can be conservatively improved by a factor of two. Of equal importance is the compaction or concentration of sludge (MLSS) by the coagulants. Experience teaches that with all other variables constant the reaction rate in the secondary is a function of the amount of MLSS. The MLSS are recirculated into the secondary from the final. Under conventional operating conditions the increase in MLSS is accomplished by increasing the recirculation rate. A typical rate is 30% of total flow. Unfortunately when the recirculation rate is increased a proportional loss in reaction time occurs due to the increased hydraulic load. The sludge concentrated by the coagulants permits an increased bio-oxidation rate in the secondary without a large loss in residence time due to excessive hydraulic loading.

A dual function of one of the coagulant chemicals is to adsorb waste and to provide a surface for biological families to generate sequential enzyme systems. The surface provided permits bacteria to create localized conditions for optimized pH and redox parameters.

The results of the plant demonstration study has shown marked improvements in the day-to-day operation and efficiency of the primary, secondary, final and digester. It is estimated that the chemical-biological approach could double the rated capacity of a typical plant at a total cost of 2 to 5¢/1000 gals. This cost figure includes operation, chemicals,depreciation and maintenance of the chemical system.

The field demonstration was a techno-economic success. Average flow rate during the 15 month trial period was 160% of rated capacity. Effluent BOD was reduced from an average of 42 mg/l to less than 4 mg/l; suspended solids were reduced from 77 mg/l to less than 5 mg/l. Total phosphate, as $PO_4^{\equiv}$, was reduced to less than 1 mg/l.

The improved throughput and efficiency was obtained at an added dollar cost. In addition to the dollar costs there are certain disadvantages to the system. Although coagulant chemicals improve filtration of the sludge, the coagulant residue adds, depending upon dosage, between 500 lbs. and 1000 lbs. of dry solid waste per day for a typical four million gpd plant. Hauling costs can be estimated at 30¢ per ton mile. Eighty five percent of all solid waste is disposed of in this manner. The relatively minor increase in solids disposal costs are often given as the excuse for not using advanced coagulation, when designing a new plant or expanding an existing facility. Of perhaps greater significance is the fact that the design engineers fee is calculated on a percentage of the total plant cost. The potential loss in income is more than a subtle driving force when one considers that a detailed cost study has shown that a plant using advanced coagulation techniques costs approximately fifty percent of that of a conventional treatment plant producing the same quality effluent.

We would be pleased to review the results of the field demonstration study with you.

Very truly yours,

R. Kirkconnell p.

R. Kirkconnell
Director of Research

RK:p

ENVIRONMENTAL DEFENSE FUND

162 OLD TOWN ROAD
EAST SETAUKET, N.Y. 11733
516 751-5191

1910 N STREET, N.W.
WASHINGTON, D.C. 20036
202 833-1485

May 21, 1971

Mr. William D. Ruckelshaus, Director
Environmental Protection Agency
1626 K Street N.W.
Washington, D. C. 20460

Mr. Gary W. Schenzel
Water Resources Planner
Environmental Protection Agency
Water Quality Office
Room 416
33 West Congress Parkway
Chicago, Illinois 60605

Re: Draft Environmental Impact Statement
for
Sewerage Project Number WPC - Ill. - 754
Submitted by North Shore Sanitary District
Waukegan, Illinois
Federal Environmental Protection Agency

Dear Messrs. Ruckelshaus and Schenzel:

Some of the citizens of the area affected by the above-mentioned project have asked us to comment on the National Environmental Policy Act environmental impact statement prepared in connection therewith. Being unfamiliar with the geographical area I am unable to comment in detail on most of the particulars covered but the statement does seem to give an adequate description of the environmental effects to be expected from the various alternative actions considered. I would gather that many if not all of the objections raised by the local citizens have been answered or minimized by recommending slight changes in the original design plan. To the extent this is true, it demonstrates how useful a tool these statements can be in allaying legitimate questions of concern raised by responsible citizens. It is hoped that this procedure will be employed widely in the future.

The law seems to require that the Water Quality Office not fund a final project design that does not incorporate the "recommendations" of the impact statement or such improvements that might be suggested as a result of this review process. It should, in fact, be made clear that no federal funds will be provided unless the recommended conditions are substantially complied with.

A specific comment relates to requesting the inclusion of an operational definition of what constitutes "the necessary waste treatment unit processes to protect" the appropriate receiving water body. It is not clear, but should be, whether a percentage removal of some item is envisioned or whether an effluent concentration of these items is means. The numerical values should be included

DENNIS PULESTON, CHAIRMAN
RODERICK A. CAMERON, EXECUTIVE DIRECTOR
EDWARD LEE ROGERS, GENERAL COUNSEL

WILLIAM A. BUTLER, ATTORNEY
WASHINGTON OFFICE

Recommendation 5) advises the Water Quality Office of the U.S. Environmental Protection Agency to

a) initiate a broad impact study of the environmental consequences of diversions of water from one watershed to another.

b) initiate a study under controlled conditions to ascertain the possibility of airborne infection from sewage treatment facilities.

There should be some assurance that an effective mechanism has been set up whereby these and similar recommendations arising from field office studies are channelled to the Research and Development Office, or other appropriate group, in either the Water Quality Office or another branch of EPA for review and evaluation. It would be disturbing to discover that such recommendations dead-end administratively in these statements, particularly since the purpose of NEPA is to assure that such recommendations are implemented.

Yours truly,
Nils E. Erickson
Nils E. Erickson

cc: The Honorable David Dominick

NEE/mlr

815 16th Street
Wilmette, Illinois 60091

19 May 1971

Mr. William D. Ruckelshaus, Adm.
USEPA
1626 "K" Street, N.W.
Washington, D.C. 20461

Re: Highland Park, Illinois
Clavey Road Sewage Treatment Plant

Dear Sir:

We are writing to urge you to support the State Pollution Control Board's decision to proceed with the above mentioned plant.

In our opinion, the difference between 12 mgd and 18 mgd is not enough to continue delaying the construction. It is time to stop putting untreated sewage in our beautiful Lake so we may once again enjoy this natural asset to its fullest.

The Illinois State Pollution Control Board is doing an excellant job, and should be encouraged in its efforts.

Sincerely,

Marshall Moretta
Joan Moretta
Marshall and Joan Moretta

cc: Richard J. Kissel

Shelly Epstein and Associates, Inc.

EXECUTIVE OFFICE 318 WEST ADAMS ST., CHICAGO, ILLINOIS, 60606 U.S.A. • PHONE (312) 782-7815-16

CABLE ADDRESS - SHEPS CHICAGO

May 17, 1971

Mr. Wm. D. Ruckelshaus,
Director E.P.A.,
Washington, D.C. 20460

Dear Mr. Ruckelshaus:

I live in Highland Park and, like so many of my neighbors, have been very disturbed by the knowledge that so many future problems in this community could be avoided by the phasing out of the Clavey Road Sewage Treatment Plant.

We welcome your objective study of this situation and take note that yours is the first really objective view of the overall pollution problems encompassing the entire area.

It renews our faith in people who are above local greed and self interest.

Thank you!

Sincerely yours,
Shelly Epstein
961 Stonegate Drive,
Highland Park, Ill.

273

League of Women Voters of Northbrook
northbrook, illinois 60062

let the people know   make the people care   help the people act

May 14, 1971

Mr. William D. Ruckelshaus
Environmental Protection Agency
1626 K Street N. W.
Washington D.C. 20460

Dear Mr. Ruckelshaus:

We are writing to protest the EPA draft environmental impact study of the North Shore Sanitary District's expansion plans for the sewage treatment facilities on Clavey Road in Highland Park.

The EPA recommendations include reducing the planned capacity of the Clavey Plant from 18 to 12 million gallons a day, and building facilities elsewhere to compensate for the reduced capacity. These recommendations, if followed, would result in greatly increased costs for the North Shore Sanitary District and its taxpayers, and would delay by at least a year the closing of 5 obsolete plants now discharging inadequately treated sewage into Lake Michigan from Lake Bluff, Lake Forest and Highland Park. The present plan, ordered by the Illinois Pollution Control Board, for an 18 million gallon capacity at Clavey, would permit diversion of sewage from the shore plants, and from the lake, as soon as new construction is complete, in 1973. Reduced capacity would delay re-routing until 1974, when the upgrading of present facilities is finished. Thus sewage receiving only primary treatment--and raw sewage during storms--will continue to enter Lake Michigan for a 50% longer time under the EPA plan than under the present timetable. And the risks involved in using sewage-contaminated drinking water will continue to be borne by tens of thousands of people on the north shore alone for a 50% longer time.

The EPA environmental impact study does not appear to consider the consequences of its recommendations on Lake Michigan and its users. The principal beneficiaries of changed plans at Clavey would be the homeowners there, and the benefit they would receive is tenuous at best. Claimed damage to property values from the presence of the sewage plant does not jibe with the fact that most of the homes there were built after the plant. Protests concerning odor are primarily based on problems connected with operating the plant considerably in excess of capacity, a situation which will continue to exist if the smaller plant is approved, since its capacity will be exceeded the day it opens. Fears of airborne viruses do not appear to be justified. The potential risk of waterborne viruses in drinking water is greater, and threatens a far greater number of people, including, it should be noted, Clavey Road residents as well.

The EPA draft study is in contradiction to the judgement, decisions, and orders of the Illinois Pollution Control Board, which is overseeing the work of the North Shore Sanitary District. The IPCB is an agency which has been moving strongly against polluters in Illinois. We are concerned that if a federal agency endorses a less stringent timetable for ending sewage discharge into Lake Michigan than that of IPCB, other polluters under IPCB orders to clean up will start to seek less stringent timetables from the federal government also, and the fine work of the IPCB will be undermined and weakened by hearings and delays.

Finally, delay in diverting sewage from the shore plants will not by itself destroy Lake Michigan, but it is one of the many insults, small and large, which added together will indeed lead to the Lake's destruction. This is the environmental impact with which the EPA should be most concerned, and which the draft study fails to consider adequately.

Sincerely yours,

Mrs Ralph Boeker

Mrs. Ralph Boeker
President
3913 Radcliffe
Northbrook, Illinois 60062
Mrs William T. Powers
Mrs. William T. Powers
Environmental Quality Chairman
1138 Whitfield Road
Northbrook, Illinois 60062

League of Women Voters
Northbrook, Illinois

HERBERT A. LOEB, III
370 HASTINGS AVENUE
HIGHLAND PARK, ILLINOIS 60035
AREA 312/432-0002

5-26-71

Mr. William Ruckelshaus
Director
Environmental Protection Agency
Washington, D. C.

Dear Mr. Ruckelshaus:

With reference to the Clavey Road Sewage Treatment Plant (I live about .6 miles from the plant), I urge that:

1) The existing plant not be enlarged and that plans be made for eventual phasing out of the plant.

2) The plant be landscaped properly, to avoid any further damage to the environment.

3) That the effluent lagoon construction be stopped at once, since tertiary treatment will supplant it.

4) That any construction which is done in the future be handled in a manner which reduces environmental damage. Enough damage has been done already.

5) That a plant be constructed, starting at once, on the Des Plaines river, of a size that will enable phaseout of the Clavey plant.

6) That the retention basin at Clavey be covered.

We appreciate the interest that the E.P.A. has taken in this matter, with special appreciation for the attention given the immediate neighbors of this plant. Yours is the first governmental body to have shown evidence that protection of these people was an important factor.

Thank you.

Yours truly,

Herbert A. Loeb, III

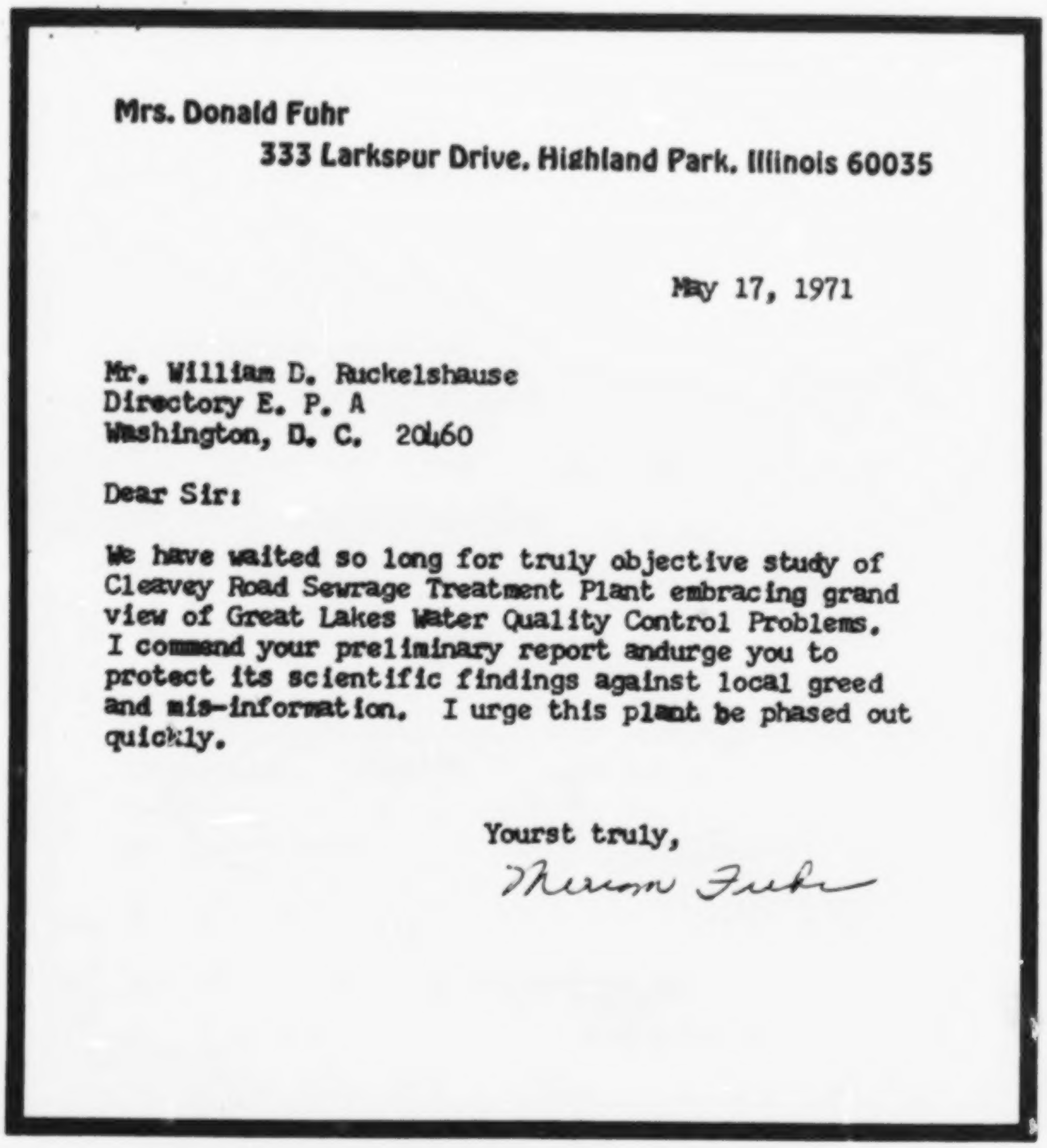
CC: Mr. Gary Schenzel
Sen. Charles Percy
Sen. Adlai Stevenson
Gov. Richard Ogilvy

THE REDMANS
206 ASPEN LANE
HIGHLAND PARK, ILL. 60035

Dear Mr. Schenzel,

We have waited so long for a truly objective study of Clavey Road STP embracing grand view of Great Lakes Water Quality Control Problems. We commend your preliminary report and urge you to protect its scientific findings against local greed and mis-information. We urge this plant to be phased out quickly.

Mr + Mrs frank redman



Mrs. Donald Fuhr
333 Larkspur Drive. Highland Park. Illinois 60035

May 17, 1971

Mr. William D. Ruckelshause
Directory E. P. A
Washington, D. C. 20460

Dear Sir:

We have waited so long for truly objective study of Cleavey Road Sewrage Treatment Plant embracing grand view of Great Lakes Water Quality Control Problems. I commend your preliminary report andurge you to protect its scientific findings against local greed and mis-information. I urge this plant be phased out quickly.

Yourst truly,

Marion Fuhr

Mrs. Timothy O. White
2414 Thayer Street
Evanston, Illinois 60201

May 15, 1971

Dear Mr Ruckleshaus,

I would like to urge you and the U.S. E.P.A. to support the findings of the Illinois Pollution Control Board concerning the building of the Clavey Road Sewage Plant. *Time* is *essential* in the matter of saving Lake Michigan and the sooner we move and get an efficient sewage plant going the better. The North Shore Sanitary Dist. is a direct polluter of our precious lake and the E.P.A.'s findings - backing 200 families near the Clavey Rd plant - but ignoring the 5.5 million people who live around Lake Michigan is disastrous. Further delays of any kind will in essence act to help kill Lake Michigan. It is not too many years behind Lake Erie when it was close to becoming a dead lake.

I urge you to do all in your power to support our fine Illinois Pollution Control Bd - a new group who is conscientious & concerned and who should be supported when they make wise recommendations to save our lake.

Sincerely,

Mrs Timothy O. White

MILDRED KIRSCH
310 HASTINGS ROAD
HIGHLAND PARK, ILLINOIS 60035

Dear Mr. Ruckelshaus;

I have waited so long for truly objective study of the Clavey Road Sewage Treatment Plant, embracing grand view of the Great Lakes Water Quality Control Problems.

I commend your preliminary report and urge you to protect its scientific findings against local greed and mis-information

I urge that this plant be phased out quickly

Sincerely
Mildred Kirsch

Donmoor.
makes things boys like to wear

May 21, 1971

Mr. Gary Schenzel
Water Resources Planner
E.P.A. Water Quality Office Rm. 410
33 W. Congress Parkway
Chicago, Ill. 60605

Dear Gary,

I am sure you can understand that as private citizens each of us has to earn our own livelihood. In other words, we are business and professional people in addition to another responsibility as parents, husbands and wives. This handicaps us to a great extent since we can not devote a great deal of time for any sustained effort over a period of time in doing what must be done in terms of the Clavey Road controversy.

I believe these are extenuating circumstances and therefore I must appeal to you to grant us an extension of time until May 26th to respond with our comments on the draft environmental statement. Mr. Turner is submitting under separate cover, engineering and technical comments: Dr. Rogoff is submitting his comments on the micro biological aspects, under separate cover, as well. The extension of time will permit Jerry Facktor and myself to complete our assigned portion of our response to the draft statement.

Cordially,

Gerry Surell

GERRY SURELL
LAKE MICHIGAN PROTECTORS OF
THE ENVIRONMENT

gs/jhm

Donmoor, Inc. 854 Merchandise Mart, Chicago, Ill. 60654 · Telephone (312) 321-0121
Headquarters: 34 West 33rd Street, New York, N.Y. 10001

Donmoor.

makes things boys like to wear

May 21, 1971

Mr. William D. Ruckelshaus
Director, E.P.A.
Washington, D.C. 20460

Dear Mr. Ruckelshaus,

As a resident of Highland Park, whose home unfortunately happens to be no more than fifty yards away from the Clavey Road sewage plant, I feel compelled to write you about the recent draft environmental statement concerning the North Shore Sanitary districts' proposed expansion plans.

It may be true I am selfishly motivated due to the unfortunate proximity of my home to this pollutor but since I have three school age children you can understand my selfishness. In addition, I am deeply concerned about the quality of our environment and about the state of our ecology. After all, it is my children -- and yours, too -- who are going to have to live in this polluted, degradated world.

Sewage treatment facilities simply do not belong in high density residential areas. The health and welfare of residents should be your primary concern. This calls for a phase out of the Clavey Road plant. We support your draft statement but urge a 9 M G D plant. Hold fast to the recommendations for advanced water treatment and completely covered retention basins. We urge that you advocate the removal of the effluent lagoon. The implementation of a study of airborne infection is a must. Combat pollution and prevent the degradation of our environment but not at the possible expense of human lives.

Very truly yours,

G Surell

MR. & MRS. GERALD L. SURELL
178 Aspen Lane
Highland Park, Ill.

gs/jhm

Donmoor, Inc. 854 Merchandise Mart, Chicago, Ill. 60654 · Telephone (312) 321-0121
Headquarters: 34 West 33rd Street, New York, N.Y. 10001

AMERICAN MOTORS

HARRIS MOTORS

221 Sheridan Road Telephone 746-1221
WINTHROP HARBOR, ILLINOIS 60096
Kenosha Telephone 658-4040

June 8, 1971

Mr. William D. Ruckelshaus, Administrator
Federal Environmental Protection Agency
Washington, D. C. 20460

Dear Mr. Ruckelshaus:

The section of Eastern Lake County Illinois, in the North Shore Sanitary District, has been gravely struck with the order of the Illinois Environmental Protection Agency that no new sewer hookup can be made to the NSSD until its facilities are expanded to take care of the present users and the calculated long range new users. I certainly agree with this thinking and I am sure most people, who are not greedy, also concur with the thinking. However this sort of action cannot and must not continue for too long a period of time.

It is my belief, as well as my colleagues, that Federal Government in conjunction with the State and County Government (NSSD) should quit "playing footsie" and make the Clavey Road Plant an 18 million gallon per day facility plus any other facility needed to get the north shore waste out of Lake Michigan and give the area back its sanitary sewer.

The economic condition, standards, and growth of the area are at a very low ebb as well as the moral of the people is sickened by the lackadaisical inability of a rich government to solve this very important problem. Another problem that should be and must be handled in the near future is some type of master sanitary sewer system for the balance of Lake County Illinois, outside the North Shore Sanitary System. The Chain of Lakes and other Lake County waterways have absorbed about all the waste they can take.

It is hoped that you will give your attention and lend your position to getting an immediate solution to the above described problems.

Thanks for the good work you have been doing.

Sincerely yours,

Jimmie Harris

S. A. "Jimmie" Harris, Chairman
Lake County Regional Planning Commission

SAH:MAH

ELAINE R. GROSSMAN

418 Briarwood Place

Highland Park, Illinois
60035

June 21, 1971

Mr. Francis Mayo
Environmental Protection Agency
33 East Congress Street
Chicago, Illinois 60605

Dear Mr. Mayo:

I do not know whether anyone has spoken for the 179,800 citizens of the North Shore Sanitary District who are not represented by the Save Highland Park Committee. As a citizen of Highland Park who lives about a mile from the plant, and as the former Water Resources Chairman of the local League of Women Voters for fourteen years, I would like to state a few points that the Save Committee does not mention.

(1) The plant is situated at the low point of the district which it serves. Much of the sewage reaches it by gravity. That fact of nature cannot be utilized at any other spot in or out of the district. At a time in history when the creation and uses of electricity loom before us as the next problem, we might consider this as an important point and enlarge the plant to whatever size necessary to take full advantage of this fact. It is the reason the plant was placed there, squarely in the middle of a swampy area, unsuitable for housing, reeking with the odor of peat bogs and an often stagnant Skokie Ditch. That a sharp developer surrounded it with houses whose inhabitants assume the ditch and peat odors come from the plant is unfortunate.

(2) If one believes that public funds collected from all should be used to the best advantage for the most people, one does not put the property values of 200 people above the needs of 179,800 other people who are taxed to raise that money.

(3) That their property values go down as the plant capacity goes up cannot be denied. That 150 doctors

signed a statement that a survey should be made to be sure the plant would not affect their health is a fact. I am a medical technician, working for the head of internal medicine at Highland Park Hospital, so I know how the signatures were obtained. The pressure tactics were exactly those you can imagine them to have been, of mothers on their pediatricians, women on their obstetricians, and allergists upon each other (as the biggest allergist in the district lives a few blocks from the plant). Any name on that list will tell you, if questioned, that the viruses in sewage are there because they are water-borne, not air-borne ... that you need no survey to remind you that mankind has a long history of shoveling manure, having an outhouse next to the kitchen door and working in sewage treatment plants without air-borne injury. Man also has a long history of water-borne infection due to untreated sewage - so we had best get on with treating ours now.

(4) In fairness to the 179,800 citizens who contribute the taxes, we had best not waste their funds on dalays and bowings to the needs of 200 unfortunate people who bought expensive houses on cheap land next to a sewage plant.

Sincerely yours,

Elaine R. Grossman

Elaine R. Grossman
(Mrs. Arthur I.)

ERG:ecl
CC to: The Honorable Charles Percy
U. S. Senate
Washington, D. C. 20510

The Honorable Adlai Stevenson
U. S. Senate
Washington, D. C. 20510

The Honorable Robert McClory
House of Representatives
Washington, D. C. 20515

Mr. William Ruckerhaus
Environmental Protection Agency
Washington, D. C. 20460

June 23, 1971

Mr. William D. Ruckelshaus, Director
Environmental Protection Agency
1626 K Street, N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus:

Please be advised that the Board of Directors of North Suburban Synagogue Beth El, 1175 Sheridan Road, Highland Park, Illinois comprising over 800 families, at their regularly constituted meeting on Monday, June 21, 1971 did pass the following resolution:

"Resolved, that North Suburban Synagogue Beth El had requested an independent study of the NSSD proposed expansion at Clavey Road and a moratorium on construction."

"Resolved, that an independent study was undertaken by the Water Quality Office of the United States Environmental Protection Agency and that a preliminary report and recommendations were made public on April 23, 1971."

"Resolved, that the North Suburban Synagogue Beth El urges and requests that:

1. Clavey Road Sewage Treatment Plant be kept to the smallest possible size, so that it could be phased out at some future date.
2. Another plant be built immediately and located in a non-residential area.
3. That the retention basins be moved to a non-residential area and be completely covered.
4. That the effluent lagoon be eliminated.
5. That the latest "State of the Art" is employed to eliminate any possible health hazards.

and

6. That a monitoring study is undertaken to eliminate any possible airborne infections.

Very truly yours,

Daniel Tauman, President

By: Sokol
Mrs. Bernard H. Sokol, Secretary

C.C. Gary W. Schenzel
C.C. Amos Turner

1210 Gregory Street
Wilmette, Illinois
60091

May 4, 1971

[illegible]
cy [illegible]

The Honorable Wm. D. Ruckelshaus
Administrator
U.S. Environmental Protection Agency
1626 K Street N.W.
Washington, D.C. 20460

Dear Mr. Rusckelshaus:

We have been told that continuation of the construction at the Clavey Road Sewage Treatment Plant has been halted for a thirty day period (for reasonable argument) to decide whether or not the North Shore Sanitary District's order to proceed with the expansion plans to make it possible to handle as a maximum 18 million gallons of water per day, - shall be implemented OR will the expansion plans be such that the plant can handle only up to 12 million gallons per day.

Mr. Gary Schenzel, water resource planner for the Federal Water Quality Administration is making it clear to the conservationist groups on the North Shore that while he understands that Lake Michigan is at the center of their thinking and of those of the federal and state boards who have ordered the replacement of five obsolete treatment plants on the lakefront, - he feels that 200 home owners in the area should receive consideration even though no tests have been made for bacterial contamination. He further added that

FEDERAL FUNDS FOR THE PROJECT WILL DEPEND ON THE ACCEPTANCE OF FEDERAL GUIDELINES.

Perhaps the DesPlaines River project west of Deerfield and between the Chevy Chase and the Thorngate Country Clubs (a project Mr. Schenzel's new plan suggests for federal funding) will be approved by the citizens of Riverwoods and others. But also it may be that building in that area will boom before Mr. Schenzel gets his "compromise" plant in operation.

It is unfortunately true that people in this area have grown accustomed to and believe in the disinterested and proven judgment of the members of the Illinois Pollution Control Board,- Messrs. Currie, Dumelle, Kissel, Lawton and Aldritch. This Board had previously given permission to the North Shore Sanitary District to issue up to $55 million more in bonds without a public referendum. But now, financial problems mount, a reduction in the processing of sewage from 18 million gallons to 4.5 to 12 million gallons per day is called a "compromise" and five obsolete outfalls continue to polute Lake Michigan. Conservationists wonder where to turn.

Respectfully and with considerable frustration
(Mrs. L. T. Wyly)

Laura S. Wyly

COMMITTEE:
WAYS AND MEANS

Congress of the United States
House of Representatives
Washington, D.C. 20515

May 19, 1971

Mr. William D. Ruckelshaus
Administrator
Environmental Protection Agency
1626 K Street
Washington, D. C. 20460

Dear Mr. Ruckelshaus:

Enclosed you will find a self-explanatory letter from my constituent Mr. Thomas J. Zielicky in regard to the proposed expansion of the North Shore District..

I would greatly appreciate whatever information and assistance your good offices can provide in connection with my response in this matter.

With kind regards,

Sincerely,

Harold R. Collier

HRC:ns
Enc.

Law Offices
of
BURTON F. GRANT
69 WEST WASHINGTON STREET
CHICAGO, ILLINOIS 60602

GRANT & GRANT
LOUIS Z. GRANT
BURTON F. GRANT

SUITE 2252
TELEPHONE
AREA CODE 312 641-3600

May 19, 1971

Mr. William D. Ruckelshaus
Director
E.P.A.
Washington, D.C. 20460

Gentlemen:

As a resident of the southern half of Highland Park, I want to commend your preliminary report and urge you to protect its scientific findings against local greed and mis-information. A truly objective study of the Clavey Road Sewage Treatment Plant embracing the grand view of Great Lakes Water Quality Control Problems has been long awaited.

I urge that this plant be phased out quickly.

Very truly yours,

Burton F. Grant

BURTON F. GRANT

BFG:lsf

Shelly Epstein and Associates, Inc.

EXECUTIVE OFFICE 318 WEST ADAMS ST., CHICAGO, ILLINOIS, 60606 U.S.A. • PHONE (312) 782-7815-16

CABLE ADDRESS - SHEPS CHICAGO

May 17, 1971

Mr. David Dominick,
E.P.A.
1626 K St. N.W.
Washington, D.C. 20460

Dear Mr. Dominick:

I live in Highland Park and, like so many of my neighbors, have been very disturbed by the knowledge that so many future problems in this community could be avoided by the phasing out of the Clavey Road Sewage Treatment Plant.

We welcome your objective study of this situation and take note that yours is the first really objective view of the overall pollution problems encompassing the entire area.

It renews our faith in people who are above local greed and self interest.

Thank you.

Sincerely yours,
Shelly Epstein
961 Stonegate Drive
Highland Park Ill.

ENVIRONMENTAL PROTECTION AGENCY
Office of Water Programs
WASHINGTON, D.C. 20242

JUN 11 1971

Mrs. William J. Pietenpol
Environmental Quality Chairman
League of Women Voters
Winnetka, Illinois 60093

Dear Mrs. Pietenpol:

Mr. Ruckelshaus has asked us to reply to your letter concerning the recommendations of our Chicago Regional Office with respect to the North Shore Sanitary District sewerage project.

This Agency is vitally concerned with the conditions of the Great Lakes, and we believe that the recommendations of the Regional Office, if implemented, will result in the provision of adequate facilities to abate pollution in the area in accordance with established Federal and State deadlines.

The purpose of the modifications of the North Shore project, as included by the Regional Office in the draft environmental impact statement, was to make the project more responsive to the total environmental needs by revision to eliminate storm water overflows to Lake Michigan; by redesigning and covering the storm water retention basin at Clavey Road; and by proceeding immediately to plan and construct a new treatment facility in a presently undeveloped area near the Des Plaines River. The second plant will provide necessary capacity to more than compensate for the recommended reduction in the planned expansion of capacity at the Clavey Road facility. Because of anticipated needs beyond even the highest proposed capacity at the Clavey Road facility, the plant on the Des Plaines site will be required in any case by 1980. Our recommendation merely moves up the deadline for its development.

As you may be aware, our Regional Office has been accumulating comments on the draft statement from the Illinois Pollution Control Board and other interested organizations and individuals. The Regional staff is now in the process of evaluating the comments prior to writing the final environmental impact statement. Copies of this correspondence are being referred to the Region for their information and consideration. If you wish to submit additional comments to that Office, please feel free to do so.

We are not certain of the meaning of the reference in your letter to the absence of matching funds for Illinois under the Clean Water Restoration Act. Since 1956, the State of Illinois has received yearly allotments under the Federal Water Pollution Control Act, as amended by the Clean Water Restoration Act, and other legislation. The Illinois allotment for Fiscal Year 1971 was $43.6 million, of which over $33.25 million has been allocated--as of this writing--to projects approved and certified for priority by the State.

We are appreciative of your concern about new legislation to continue the construction grant program. President Nixon has proposed the continuation of the program and recommended the appropriation of $6 billion for the next three years, to be allotted at the rate of $2 billion for each of the years 1972 through 1974. The legislation which is presently under consideration by the Congress would double last year's appropriation.

Your interest in the protection of Lake Michigan and in the funding of the construction grant program are very much appreciated. You are assured of our continued efforts under requirements of the Federal Water Pollution Control Act and the National Environmental Policy Act of 1969 to assist the States and localities in constructing facilities which will contribute to the goals which you advocate.

Sincerely yours,

Ralph C. Palange

Ralph C. Palange
Acting Director
Division of Facilities Construction and Operation

cc: Regional Office, Chicago (2)

League of Women Voters
of Winnetka — Northfield — Kenilworth
Winnetka, Illinois 60093

May 6, 1971

Mr. William Ruckelshaus, Director
U.S.E.P.A.
1626 K Street N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus:

As participants in the Lake Michigan Interleague Group and members of the League of Women Voters of Illinois we are deeply concerned about the recent recommendations of the U.S. Environmental Protection Agency to the North Shore Sanitary District, placing limits below those previously approved by the Illinois Pollution Control Board for the construction and expansion of the Clavey Road sewage disposal plant in Highland Park.

Once again controversy brings much delay in a situation, which at its best sends raw, untreated sewage into Lake Michigan. We strongly back the recommendations of the Illinois Pollution Control Board. We urge you to intervene and give your strong support to those plans set forth by the Illinois Pollution Control Board in behalf of the millions of people who use Lake Michigan.

Last November, the Anti-Pollution Bond Act, for which we worked so hard, was passed, but Illinois has received no matching federal grants under the Clean Water Restoration Act which soon expires. Our concern deepens as the July 1, 1971 deadline approaches and no new legislation to extend the federal grant program is forthcoming. We ask your immediate help in obtaining the legislation to make available future funds which are so essential to clean up Illinois lakes and rivers.

Yours very truly,

Marlea Pietenpol
(Mrs.) William J. Pietenpol
Environmental Quality Chairman

Josephine R. Fraenkel
(Mrs.) Stephen J. Fraenkel
President

Enforcement
Schengel

MRS. RALPH G. DUNLOP
2246 ORRINGTON AVENUE
EVANSTON, ILLINOIS 60201

June 13, 1971

Mr. William D. Ruckelshaus, Administrator
United States Environmental Protection Agency
1626 K Street
Washington, D.C.

Dear Mr. Ruckelshaus:

I am very much concerned about the restoration and preservation of the quality of Lake Michigan. I hope that we will do everything possible to avoid further deterioration of the Lake.

In this connection, it seems to me to be imperative that the Clavey Road, Highland Park, Illinois, sewage ~~disposal~~ treatment plant be expanded to the recommended 18mgd capacity now.

I know that a contrary preliminary decision has been made. In light of the evidence presented in support of the expansion of this plant, and the pollution which is resulting from delay in expansion, I request that you reconsider your decision.

Sincerely,
Mary Helen Dunlop
Mary Helen Dunlop
(Mrs. Ralph G.)

Copy Mr. Francis Mayo

295

MRS. ELAINE LE GOFF
1663 NORTHLAND AVENUE
HIGHLAND PARK, ILLINOIS 60035

June 1, 1971

Mr. Gary Schenzel
Fed Water Control Office
33 East Congress Parkway
Chicago, Ill.

Dear Mr Schenzel,

My husband and I have become quite concerned and involved in several issues since moving to Highland Park last August. Although we were both raised in Highland Park it has been almost 20 years since we've [illegible].

We believe that the Federal Water Quality suggestions for the Clavey Road Sewage treatment plant are sound. The 12 million gallon expansion seems reasonable for that location. We do believe that there should be tertiary treatment as soon as possible and that a sewage plant should be built to accommodate the rising need.

There is an interesting article in the June 1971 Readers Digest about how the residents near Lake Tahoe have solved the problem of their sewage treatment. Tertiary treatment was the answer for them.

We hope that this controversy over the treatment plant can be settled so that the plant will be finished in such a way as to treat, safely the sewage that has been dumped into Lake Michigan. We must save our lake.

Sincerely,

TO: Mr. G. W. Schenzl,
Water Resources Planner, EPA WQO

FROM: Dr. Martin H. Rogoff

DATE: May 21, 1971

SUBJECT: Comments on draft environmental impact statement:
Project WPC-ILL-254; WQO, Reg. V,FEPA

My reading of the assessment prompts the following comments:

First, general:

1. The report is thorough, well written and most objective.
2. The report conclusions (pp 37-38) take cognizance of three factors that NSSD is either unwilling to consider or chooses to disregard. These are a) whether diversion of clean water, assuming future adequate sewage treatment, from the lake is the correct long range plan; b) that an epidemiological hazard indeed may exist in association with sewage treatment facilities, and c) that malfunctions in sewage treatment facilities are possible and probable. Recognition of these factors by EPA is most commendable and several specific comments listed below are pertinent to these points.
3. The report recognizes the existence of human inhabitants in the environs of the plant (p 23). It further recognizes that their needs must also be considered.

Specific comments.

1. Recognition by EPA that the existence of malfunctions in sewage treatment processes may occur (p 8) is noted. This is precisely the instance in which epidemiological hazards are most likely to exist (also p 12).
2. The clean water biota which will arise as a result of discharge of high quality water into the Skokie River should be noted. It is stated to be more sensitive to changes in water quality of the stream. This is quite important in that such a biota can be used as an indicator of effectiveness of the plant treatment process. In short, the manner of operation of the plant by NSSD can probably be effectively monitored by suitable microbiological analytical procedures designed to characterize the new biota and observe changes in it.
3. The entire position of NSSD on epidemiological considerations rests on testimony of Dr. Deinhardt (p 25). This testimony is not included in the appendix. It should be! The nature of his testimony is such that it cannot support his conclusion that no danger exists, or will exist. Several points he made can be negated by the Berg paper (included) and by more recent literature (M. Rogoff, included) now in the statement.

////

4. Chlorine handling hazards precautions have not considered the public. NSSD personnel protective measures are exhaustively covered. Since NSSD employees on NSSD property can be further from the chlorine than are certain areas outside the plant, consideration and facilities for the safety of individuals in these areas should be recommended.

5. The commentary of G. M. Marks is most comprehensive. His position *re* conflicting testimony on the health aspects should be quoted.

6. Van Mersbergen's comments (p 91) are pertinent. He has picked up an engineering soft point whose impact has not been thoroughly explored in the assessment *re* SO_2 and H_2S.

7. It is most interesting that the Bureau of Water Hygiene has no comment as to health effects to other than bathers and water drinkers (p 92). Do they assume Clavey Road dwellers are not exposed to the same pathogens?

8. NSSD's "practical measure of effect on environmental" viz., real estate values assumes realtors and homebuyers are public health experts (NSSD revised 12/14/70, p 18). I would hesitate, as should EPA, to certify validity of lack of health aspects of plant expansion on the basis of real estate values.

9. NSSD has maintained lack of *disease* symptoms in sewage plant workers is adequate evidence of lack of hazard. Berg's paper (p 148) effectively explains why disease incidence in certain individuals may not be pertinent. This refutation should have been quoted and its significance explored.

10. I would like to add the following two references, if I may, to my statement.

    DUBOVI, Edward J. 1970. Biological Activity of the Nucleic Acids Extracted from Two Aerosolized Bacterial Viruses. *Applied Microbiology* 21,4, 761-762.

    BENBOUGH, J. E. 1971. Some Factors Affecting the Survival of Airborne Viruses. *J. gen. Virol*. 10,209-220.

MHR/jb

The Waukegan News-Sun
F. WARD JUST, PUBLISHER

100 WEST MADISON STREET / WAUKEGAN, ILLINOIS 60085 / AC 312 689-7000

April 7, 1971

Mr. Donald Rumsfeld
Executive Office of the President of the United States
Washington, D. C. 20506

Dear Mr. Rumsfeld:

Attached you will find the Illinois Pollution Control Board orders issued March 31, 1971, to the North Shore Sanitary District which has information vital to the future of the district and the 200,000 people it serves.

We earnestly solicit your immediate attention to the recommendations and urge that you convey this information to the Environmental Protection Agency so they may have the benefit of this information prior to their decision on the forthcoming Environmental Assessment of the North Shore Sanitary District.

As a citizen of the district, I can't stress too strongly the urgency and importance of accomplishing this.

With kindest personal regards,

Sincerely,

Richard F. Kennedy

Richard F. Kennedy
Executive Vice President

RFK:ld
enc:

VILLAGE OF LYONS

INCORPORATED
1888

WILLIAM G. SMITH
President
ROBERT J. NELSON, JR.
Clerk
ANTHONY MALIK
Court Clerk
STANLEY J. BEZDEK
Treasurer
HATTIE BREDFIELD (MRS.)
Collector

TRUSTEES
HOWARD GAULT
GEORGE W. GOLDBECK
ELWOOD N. GRAUNKE
E. JAMES HARTWIG
GEORGE KUCHARCHUK
MICHAEL MARTINEK

May 21, 1971

Federal Environmental
Protection Agency
1819 West Pershing Road
Chicago, Illinois

Gentlemen:

I am writing this letter on behalf of the President and Village Board of the Village of Lyons.

The Village of Lyons is greatly disturbed by the actions of the Federal Environmental Protection Agency's recommendation for the construction of a sewage treatment plant at the Cook-Lake County line discharging sewage effluent into the Des Plaines River.

The Des Plaines River has changed in recent years from being a source of recreation and pleasure to the residents of the Village of Lyons, to a source of pollution, disagreeable odors and discomfort to the same residents. The residents of the Village of Lyons were very hopeful that the quality of the Des Plaines River would be upgraded and the pollution would be ended. However, we feel that your proposal for this sewage treatment plant will merely aggravate the pollution.

We, therefore, wish to go on record that the Village of Lyons is in complete opposition to the further discharge of any sewage treatment plant effluent into the Des Plaines River under the present water quality standards and the existing physical conditions regarding the Des Plaines River. The Village of Lyons further states its complete opposition to the construction of any sewage treatment plant facilities for treatment and discharge of sewage into the Des Plaines River, unless the same be equipped and capable of providing third stage, supplementary and tertiary treatment of sewage, capable of removing 95% or more of the organic or oxygen-demanding pollutants from effluent being discharged into the Des Plaines River.

Very truly yours,

Karl Klomann
Karl Klomann
Village Attorney

KK:ER
CC: Mr. William G. Smith
Mr. Carl Duffek

BOX 583 WILMETTE [illegible]

the Committee on Lake Michigan Pollution

NOT REPRODUCIBLE

May 17,1971

Mr. William D. Ruckelshaus, Administrator
U.S. Environmental Protection Agency,
Washington, D.C.

Dear Mr. Ruckelshaus:

The Committee on Lake Michigan Pollution is a citizens group of residents in suburbs north of Chicago. We total about 250 people. We have been an active group for the past three years.

Among many other environmental matters we have had a position on and have worked diligently on have been a Bond Issue for the North Shore Sanitary District, and a state bond Issue which would be for the construction of sewage treatment plants in Illinois. We have had observers at all the recent hearings concerning the North Shore Sanitary District. Our major concern is pollution of Lake Michigan.

We were and still are very pleased with the carefully thought out and well presented opinion and order of the Illinois Pollution Control Board on this very controversial issue. We are very dismayed and disappointed with the USEPA environmental impact statement. In our opinion it will delay construction, delay getting the [illegible] sewage out of the lake from five treatment plants along the lake. It also will add around $30 million in costs, in fact, each month of delay adds 1% to costs.

200 very unrealistic citizens have held up construction for two years, and thus have permitted increased degradation of the lake. Beaches have been closed and health officers say they will again be closed. No evidence has been presented that proves there will be deleterious effects to these residents due to the enlargement of the Clavey Road treatment plant. There are some problems at Clavey due to it being grossly overloaded at present. With proper expansion to 18 mgd there will not be this problem.

Similar treatment plants have not had citizen complaints. This is a matter of vital concern to all communities along the lake. Expert witnesses such as Dr. Stoermer of the University of Michigan have told us of the very sad condition of Lake Michigan. It is of the utmost urgency to keep nutrients and other pollutants out of the lake that are presently being put there by the North Shore Sanitary District. The District has been trying for several years to get moving. The Illinois Pollution Control Board ordered them to proceed full speed ahead. We urge the USEPA to honor the opinion and order of of our capable Board. They have studied this case diligently.

Very truly yours,

President

Aleda

MRS. MARSHALL FINKELMAN
332 LARKSPUR, HIGHLAND PARK, ILLINOIS 60035

Dear Mr. Dominick,

Have waited so long for a truly objective study of Clavey Road STP. embracing a grand view of Great Lakes Water Quality Control Problems. I commend your preliminary report & urge you to protect its scientific findings against local greed and mis-information. I urge this plant be phased out quickly.

Sincerely,

Mrs. Marshall C. Finkelman
May 15, 1971

May 13, 1971
709 ~~W~~ Norfolk
Westchester Ill

Federal Wate ~~[illegible]~~ Quality office
33 E. Congress Pkwy
Chicago, Ill.
60605

Dear Gentlemen;

I hope you can stop the people from puting the sewage into Lake Michigan and the Desplaines river.

Sincerely yours,
Darrell Petrusek

Dale

Tar
Sub. Clavey Road

I have briefly reviewed the impact statement ~~& have comments as follow~~ & talked to MacMillan. I have comments as follows.

1. In so far as I ~~a~~ understand ~~the~~ our position I consider it to be a good one. I believe, however, that we have done a poor job with the impact statement and perhaps with political considerations.

---

2. The arguments in the statement with respect to [illegible] unavoidable adverse affects on page 15 i.e.

that clean water organisms would be adversely affected by storm water overflows & failures seem specious to me as the body of water is going to be improved even with such overflows & failures. The comparison that making a beach suitable for swimming ~~is~~ can result in ~~people~~ having it declared unsafe once in a while ~~seems~~ is somewhat apt. The improvement is not total, that's all.

3. ~~With respect to the~~ The reduction of the 18 MGD plant ~~from~~ to 12 mgd is justified in my mind ~~by [illegible]~~ if it is true as MacMillan

says that

a There need not be any appreciable delay

b. The 12 MGD plant will not overload before the next plant can be put in

c. ~~Expan~~ Adding tertiary, storage, & covering to the 12 MGD plant makes a structure that is quite sizable

d. Any delay that does occur can be used to speed up tertiary treatment & make [illegible] diversion to the Des Plaines unnecessary

4. Another question is whether it was necessary, given the fact that IPCB had already taken the flack for [illegible] the [illegible] construction of an 18 MGD plant for us to issue a different opinion. It may be that, politically

it would have been advantageous to accept
the 18MGD plant, request additional storage,
landscaping,
covering, but rig ~~the~~
loading to the plant so that ~~[illegible]~~ all
the storage facilities would not be obtained
at once and land could be purchased
in the area after the fire had died down.

GENERAL ASSEMBLY
State of Illinois
Bradley M. Glass
State Representative – 1st District

723 Happ Road
Northfield, Illinois 60093
(312) 446-2506

COMMITTEES:
Education
Elementary and Secondary
Judiciary I

June 12, 1971

Mr. William D. Ruckelshaus
United States Environmental
  Protection Agency
1626 "K" Street, N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus:

I am greatly alarmed by the recommendation of the United States Environmental Protection Agency to reduce the capacity of the sewage treatment plant being expanded at Clavey Road in Highland Park, Illinois. It is my understanding that the Illinois Environmental Protection Agency recommended an expansion of this plant to 18 mgd, but that your agency reduced this to 12 mgd and also reduced the planned storm water retention basin from 20 million gallons to 10 million gallons.

This action is in defiance of the recommendations of the Illinois Environmental Protection Agency which gave the matter a thorough and fair hearing. Furthermore, this plant, when expanded, would replace 5 other inadequate primary treatment plants. With a change to 18 mgd it will have allowed for growth in the community and for wet weather flow. A plant with a capacity of 12 mgd, however, will allow for neither. The threat to Lake Michigan is obvious - a discharge of inadequately treated sewage.

This is an intolerable result. It is my sincere hope, therefore, that you will review your recommendation and revise it in accordance with that of the Illinois Environmental Protection Agency.

Very truly yours,

Bradley M. Glass

Bradley M. Glass

BMG:bp

cc: Mrs. Eileen L. Johnston
    Mrs. Leonard Liebschutz

North Suburban Synagogue Beth El

1175 SHERIDAN ROAD, HIGHLAND PARK, ILLINOIS 60035 / PHONE 432-8900

Samuel H. Dresner
Rabbi

Philip L. Lipis
Rabbi Emeritus

Dr. Louis Katzoff
Director of Religious Education

Cyril G. Oldham
Executive Director

Gerard W. Kaye
Youth Director

June 23, 1971

Mr. William D. Ruckelshaus, Director
Environmental Protection Agency
1626 K Street, N.W.
Washington, D.C. 20460

Dear Mr. Ruckelshaus:

Please be advised that the Board of Directors of North Suburban Synagogue Beth El, 1175 Sheridan Road, Highland Park, Illinois comprising over 800 families, at their regularly constituted meeting on Monday, June 21, 1971 did pass the following resolution:

"Resolved, that North Suburban Synagogue Beth El had requested an independent study of the NSSD proposed expansion at Clavey Road and a moratorium on construction."

"Resolved, that an independent study was undertaken by the Water Quality Office of the United States Environmental Protection Agency and that a preliminary report and recommendations were made public on April 23, 1971."

"Resolved, that the North Suburban Synagogue Beth El urges and requests that:

1. Clavey Road Sewage Treatment Plant be kept to the smallest possible size, so that it could be phased out at some future date.
2. Another plant be built immediately and located in a non-residential area.
3. That the retention basins be moved to a non-residential area and be completely covered.
4. That the effluent lagoon be eliminated.
5. That the latest "State of the Art" is employed to eliminate any possible health hazards.

and

6. That a monitoring study is undertaken to eliminate any possible airborne infections.

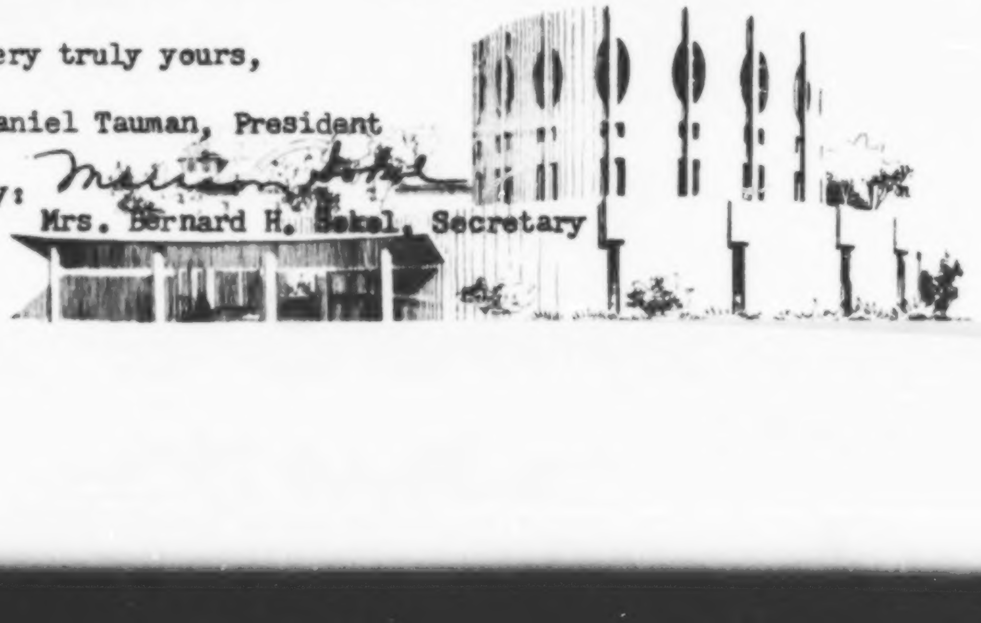
Very truly yours,

Daniel Tauman, President

By: Mrs. Bernard H. Sokol, Secretary

311

C.C. Gary W. Schenzel
C.C. Ames Turner



MRS. RALPH G. DUNLOP
2246 ORRINGTON AVENUE
EVANSTON, ILLINOIS 60201

June 15, 1971

Mr. William D. Ruckelshaus, Administrator
United States Environmental Protection Agency
1626 K Street
Washington, D.C.

Dear Mr. Ruckelshaus:

I am very much concerned about the restoration and preservation of the quality of Lake Michigan. I hope that we will do everything possible to avoid further deterioration of the Lake.

In this connection, it seems to me to be imperative that the Clavey Road, Highland Park, Illinois, sewage disposal plant be expanded to the recommended 18mgd capacity now.

I know that a contrary preliminary decision has been made. In light of the evidence presented in support of the expansion of this plant, and the pollution which is resulting from delay in expansion, I request that you reconsider your decision.

Sincerely,

Mary Helen Dunlop
(Mrs. Ralph G.)

Copy Mr. Francis Mayo

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May 18, 1971

THIS FILE IS THE RESPONSIBILITY OF:
Alfred W. Lewis

Water Quality Office, Region V
Federal Environmental Protection Agency
33 East Congress Parkway
Chicago, Illinois 60605

Attn: Mr. Gary Schenzel

Re: Draft Environmental Impact Statement dated April 21, 1971
For Sewage Project No. WPC-Ill. 754 Submitted by North
Shore Sanitary District, Waukegan, Illinois

Gentlemen:

I have been instructed by the President and Board of Trustees of the Village of Riverwoods, Lake County, Illinois, as its attorney, to comment on the above described Draft Environmental Impact Statement.

The Village of Riverwoods is an entirely residential community bounded on the west by the Des Plaines River and the Lake County Forest Preserve. It is bounded on the south by the Lake Cook Road. The Village residents will, therefore, be directly affected by the location of sewage treatment facilities on the Des Plaines River at the Lake Cook Road as is mentioned and proposed in your Draft Environmental Impact Statement.

The Village received no notice or advice concerning your Draft Environmental Impact Statement of May 17, 1971, and it was only by happenstance that at the regular meeting of the Board last evening, a resident of the Village who had procured a copy of the statement from your offices presented the same to the Village Board. It was immediately noted from Page ii of the Summary that only 30 days are available for comment from interested persons following release of the Statement. If it was intended by the Water Quality Office, E.P.A. that the 30 days available were those days immediately following April 21, 1971, it is obvious that there has been insufficient notice and time to intelligently comment on the Statement. However, giving consideration to the nature and character of the environment and development of the area of Riverwoods, including the Des Plaines River and the adjacent Lake County

Forest Preserve, and upon cursory review of the Statement, certain comments are immediately appropriate.

1. The Des Plaines River is essentially a recreational facility through all of Lake County and the northern part of Cook County.

2. For many years, the area surrounding the river in northern Cook County has been preserved as a forest preserve district. For at least the past five years, the Forest Preserve District of Lake County has expended large sums of money in acquiring property abutting the Des Plaines River to preserve its natural beauty and use as a forest preserve for the general public.

3. The entire Village of Riverwoods, as the name of the village implies, is composed of heavily forested land with winding private paths providing access to the substantial homes which are all located on one- to five-acre lots.

4. The location of a sewage treatment plant on the river within the boundaries of Riverwoods would reverse entirely the concept of environmental development which has been planned and executed over the past many years.

5. The Clavey Road facility was proposed, planned and approved by the several governmental agencies only after years of study and debate. If the study, plan and approval were valid in the first place, it is particularly difficult to understand or accept as valid comment this latest statement suggesting major alternative proposals for locations of the treatment facilities.

6. The Skokie River Basin, a proposed alternate, has been used for many years as an adjunct to the collection and discharge of the sewage systems serving the general area. Your report indicates that it might be expanded as an alternate method to relieving the North Shore Sanitary District from the complaints of residents living near the Clavey plant.

7. It is quite unthinkable that the heretofore recreational Des Plaines River area is now proposed to be used as a means to serve the sanitary sewage requirements of the North Shore area. As noted above, such proposal reverses the use and planned conservation of a natural, recreational environment.

On behalf of the Village of Riverwoods and its residents, we ask and trust that your draft proposal to locate a sewage treatment plant at the Lake Cook

Road and the Des Plaines River will be submitted to full public disclosure and discussion before any final decisions are made. We further ask that you kindly acknowledge this letter and furnish us with your comments concerning the procedures and proposals for further action on the project.

Respectfully submitted,

Alfred W. Lewis, Attorney for the Village
of Riverwoods, Lake County, Illinois

AWL:b
cc's to: President and Board of Trustees of the Village of Riverwoods
cc: Chairman of the Lake County Forest Preserve District
cc: Deerfield Review
cc: Illinois Environmental Protection Agency
cc: Administrator of the United States Environmental Protection Agency
cc: Attorney for the North Shore Sanitary District
cc: Honorable Robert McClory
cc: Honorable Charles H. Percy
cc: Honorable Adlai E. Stevenson III

APPENDIX B

PUBLISHED ARTICLES, STATEMENTS, AND TESTIMONY

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Reprinted from AMERICAN INDUSTRIAL HYGIENE ASSOCIATION JOURNAL
Volume 27, November-December, 1966

Bacterial Air Pollution from Activated Sludge Units

CLIFFORD W. RANDALL* and JOE O. LEDBETTER†
Arlington State College, Arlington, Texas, and The University of Texas, Austin, Texas

Large numbers of potentially pathogenic bacteria were collected from the air surrounding activated sludge units, and many persisted for a considerable time and distance. Significantly, the airborne enteric pathogens were greatly outnumbered by bacteria of proved pathogenicity in the respiratory tract. *Klebsiella pneumoniae* was the pathogen isolated most frequently, and several studies concerning the spread, longevity, and factors of pathogenicity of this organism were conducted. The potential health hazard of the emitted respiratory pathogens was considerably increased by the fact that a large percentage of the aerosol particles transporting viable bacteria were of a size permitting lung penetration.

THE RESEARCH reported here was done to obtain data on the numbers and types of bacteria emitted to the atmosphere from activated sludge units, data that would be useful in evaluating the possible hazard of infection to sewage plant operators and others in the immediate vicinity.

Literature Survey

Nearly all early theories of disease transmission taught that the air was the chief vehicle of infection. This belief existed as far back as 1600 B.C.[1] and was promoted by Hippocrates, the "father of medicine," with his writing that men were attacked by fevers when they inhaled air containing hostile pollutants.[2] Foul odors associated with sewers, wastewater, and rotting organic material were generally considered to be evidence of such "hostile pollutants," and even the early movements for sanitary improvement during the 18th and 19th centuries were based on miasmic theory.[1]

Following the advent of the germ theory of disease in midnineteenth century, distinction was drawn between foul-smelling air and infective air.[3] Many attempts were made to link intestinal disease to airborne organisms, but few efforts were made to actually measure bacterial emissions from wastewater. Toward the end of the century Miguel counted 800 to 900 bacteria per cubic meter of air in Paris sewers; however, he found like numbers in the air of the city streets. Similar bacterial counts were obtained by Carnelly and Haldane in London sewers.[2] Horrocks also studied airborne bacteria in London sewers, but he was primarily interested in mechanisms of emission.[4] Winslow was concerned about the possible transmission of enteric fever through the inhalation of sewer gas.[5] He proved that the splashing of sewage liberated organisms into the air where they could be borne considerable distances, but he concluded that infection from sewer gas was remote.

By 1910 nearly all the dreaded epidemic diseases, particularly those infecting the intestines, had been traced to vehicles other than air, as their primary modes of infection and airborne infection had practically been discounted. Moreover, as control of typhoid fever became established through water treatment, feces disposal, and food sanitation, interest in airborne sewage organisms practically disappeared.

Following a revival of interest in airborne

Presented at the American Industrial Hygiene Conference, Pittsburgh, Pennsylvania, May 16-20, 1966.

*Assistant Professor, Arlington State College.

†Associate Professor, The University of Texas.

infection around 1930, Fair and Wells conducted the first study of bacteria emitted to the atmosphere by sewage disposal processes.[8] From their brief look at the bacterial density of the atmosphere surrounding sewage treatment works, they concluded that bacterial contamination of the air by sewage works exists and that liberated organisms of respiratory and skin diseases could remain airborne and viable for long periods of time.

Apparently the next actual study of bacterial air pollution from waste treatment facilities was conducted by Albrecht[7] in 1958. He determined the numbers of bacteria downwind of a trickling filter and found that the distance of travel of viable bacteria correlated directly with the wind velocity.

Prior to Albrecht's investigation, Jensen had looked into the presence and survival of the tubercle bacillus in the liquid phases of sewage treatment processes.[9] From these results he surmised that there is a real danger of tuberculosis infection, especially to operating and supervisory personnel, from droplets injected into the air by activated sludge units, by trickling filters, by spray irrigation with sewage effluent, and by wind action on wastewater surfaces. Several people have shown that many human pathogens are contained in various stages of the sewage treatment process.[9,10] Because pathogens are present in the liquids being treated, some cursory attempts have been made to determine whether the incidence of infection among sewage plant workers is increased, but they have resulted in inconclusive findings that were attributed to incomplete employee medical records.[11]

The mechanism of aerosol production by bursting air bubbles on the surface of salt water was studied by Woodcock.[12] He saw the small particles evaporate before falling back to the water surface and became convinced that aeration of sewage would result in large numbers of airborne bacteria. Higgins conducted laboratory research into bacterial aerosol production resulting from aeration of polluted water.[13] He used suspensions of several species of microorganisms to find the effect of aerosolization and chemical additives along with other variables on the generation of viable aerosols. Higgins reported very low recoveries of coliform organisms compared with *Serratia marcescens*, *Bacillus subtilis*, and two *Streptococcus* species, with no viable *Escherichia coli* or *E. freundii* found.

The Enteric Bacilli

To accomplish a significant study of the wide variety of bacteria that may be emitted from an activated sludge unit, biochemical classification studies during this investigation were restricted to the enteric bacilli. Generic identifications were further restricted to members of the family Enterobacteriaceae.

In this study the enteric bacilli are considered to be gram-negative, non-spore-forming rods whose common habitat is the intestinal tract of man. They are defined here to include all members of the family Enterobacteriaceae plus *Pseudomonas aeruginosa*, *Alkaligenes faecalis*, and all other *Pseudomonas*, *Alkaligenes*, and related species that are capable of growth on EMB agar.

Enterobacteriaceae

The Enterobacteriaceae are made up of a series of interrelated types that do not lend themselves to sharp division into tribes or genera; however, the family is so large and unwieldy that it is necessary as a matter of expediency to divide the family into groups that form the basis of practical work. The following grouping, primarily as proposed by Ewing and Edwards,[14] will be used in reporting the results of this study. All isolated members of the family will be classified and reported according to groups, whereas the only species and subgroups reported will be those listed in Table I.

This grouping is based on both biochemical and antigenic relationships, and it does not recognize the distinction of the "paracolon group" based on slow lactose fermentation. The *Klebsiella oxytocum* of Lautrop[15] is included in the *Klebsiella* group as recommended by Ewing and Edwards; however, in this study it is differentiated from *K. pneumoniae* simply by the ability to produce in-

TABLE I
Classification of Enterobacteriaceae

Principal Divisions	Groups
Shigella – Escherichia	*Shigella* *Escherichia* *E. Coli* Types I and II Alkalescens – Dispar
Salmonella – Arizona – Citrobacter	*Salmonella* Arizona Citrobacter Bethesda – Ballerup
Klebsiella – Aerobacter – Serratia	*Klebsiella* K. *pneumoniae* K. *oxytocum* *Aerobacter* Hafnia *Serratia*
Proteus – Providence	*Proteus* Providence
Erwinia	*Erwinia*

TABLE II
Differentiation of *Klebsiella* and *Aerobacter*[a]

	Lysine	Arginine	Ornithine	Motility
Klebsiella	+	−	−	−
Aerobacter aerogenes	−	+	+	+

[a] Note: + positive reaction, − negative reaction.

dole. Identifications of the members of the family were made by the methods of Edwards and Ewing[16] and of Kauffmann.[17]

Satisfactory differentiation between *Klebsiella* and *Aerobacter* can be made through the use of motility and amino acid decarboxylase reactions as recommended by Kaufmann.[18] The reactions are shown in Table II.

Other Enterics

Besides the Enterobacteriaceae, the gram-negative rods most commonly found in the intestinal tract are of the *Alkaligenes* species, particularly *A. fecalis*. Other common inhabitants are the pseudomonads, primarily ***Pseudomonas aeruginosa***, and the ***Flavobacterium*** species. The ***Alkaligenes*** and ***Pseudomonas*** groups are of particular interest in this study because the work of McKinney and Weichlein[19] indicates that they are the predominant bacteria in the activated sludge at the Austin biosorption plant, where most of the data reported here were obtained.

Sampling and Counting Methods

The sampling of viable airborne bacteria was done by three different methods: (1) direct plates, (2) liquid impingement, and (3) the Andersen sampler. The method selected depended on the requirements of the particular experiment.

Direct Plate Method

During the early phases of the study, airborne bacteria were sampled by merely exposing the surfaces of poured agar plates to the wind for three minutes at a height of 4 feet. The sampling was done in duplicate with the 3½-inch petri plates facing the wind but tilted backward about 30 degrees for impaction of the aerosol on the agar surface. This method was not attempted during periods of calm.

Impinger Method

The impinger used was especially designed for sampling bacterial aerosols (Millipore all-glass impinger) with 30 ml of a sterile collecting fluid (may be nutrient) to impinge the aerosols. After sampling, the liquid was filtered through a membrane filter which was then placed on a nutrient agar base in a petri dish and incubated for 12 to 18 hours at 35°C. The colonies were counted under oblique lighting and magnification. The short incubation periods were used to prevent the colonies from merging.

The violence of the agitation during impingement should have broken any clumps and promoted counts of individual bacteria. The samples were filtered within 45 minutes to reduce the possibility of multiplication by the bacteria in the impinger.

Andersen Sampler Method

The Andersen sampler was employed to collect bacterial aerosols by impaction on nutrient agar surfaces and to separate them simultaneously into six size ranges on six different agar plates.[20] The first two stages of the sampler removed particles greater than 5 microns; the remaining four stages removed the respirable particles (less than 5 microns), those that may be breathed into the lower respiratory tract.

The plates obtained with the Andersen sampler were counted in the usual manner when the numbers were small, and in all cases for the first two stages; however, when large numbers of colonies were collected, the probable numbers of bacteria were obtained from tables that were statistical considerations of the number of positive holes (among the 400 perforations) for stages 3 to 6 as outlined by the designer.[20]

Background

In each experiment on prototype plants the intent was to measure the increase in the bacterial population density of the air as a result of its passage over the aeration units. To accomplish this objective a background count was made upwind of the aeration unit in each sampling, the background was subtracted from the downwind counts, and the data were recorded as net counts. Routine technique controls were run throughout the study in order to maintain high standards for accuracy.

The wind, temperature, and relative humidity were recorded for each test. Wind velocities were obtained from the U. S. Weather Bureau at the municipal airport 3½ miles NNW from the sampling area and were used on the assumption that the same regime prevailed at the two places.

Sampling Location

The data presented here came primarily from the Govalle biosorption sewage disposal plant in Austin, Texas. Most of the samples were taken in the vicinity of and downwind from the activated sludge tanks, but a cursory examination was also made of the bacteria emitted by the grit and grease removal unit, which uses diffused aeration. In addition, a few samples were collected at the activated sludge plant in Round Rock, Texas, to see if emissions from that plant, which does not use chlorine for controlling septicity in the sewage lines, are about the same as for Austin, which does practice such chlorination.

The samples that were intended primarily for determining the density of bacterial emissions were generally taken at 20-, 50-, and 100-foot distances downwind of the aeration unit, while those samples for study of the types of bacteria and their relative abundance were usually made immediately adjacent to and downwind from the aeration tanks at heights of 2 to 4 feet above the liquid surface.

Indentification Techniques

The identifications were made in a cursory or gross manner by selective sampling, while differential biochemical tests and antiserums were used for laboratory classifications.

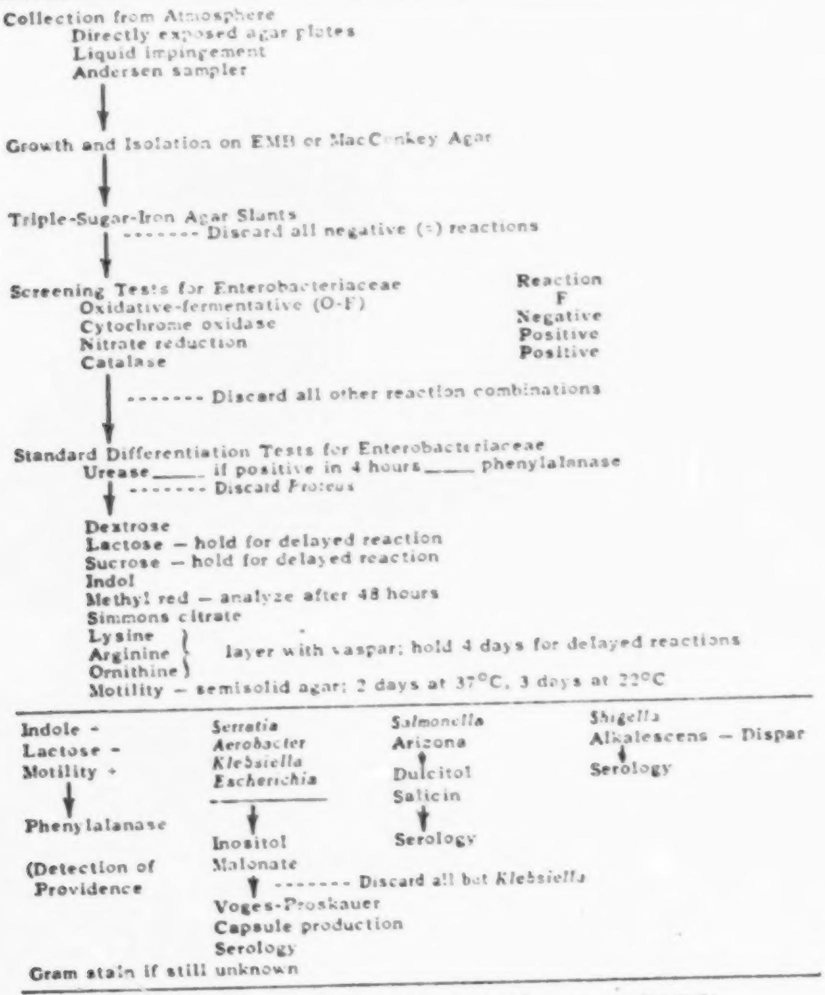
Selective Sampling

Nutrient agar (BBL) and eosin-methylene blue (EMB) agar (Difco) plates were exposed simultaneously for all samples. The nutrient agar plates were incubated for 24 hours at 35°C before counting, whereas the EMB plates were incubated for 48 hours because of the effects of the inhibitory agents. Total counts were obtained from both media, and coliform organisms were determined by typical reactions on the EMB agar. The accuracy of the coliform reaction on EMB agar for the bacteria being sampled was evaluated biochemically by the procedures given in Table III. Of 28 typical coliform colonies picked, all were members of the family Enterobacteriaceae. The only noncoliforms found were two *Serratia*. Of the other 26 colonies, seven were *E. coli*, four were Citrobacter, six were intermediate *Escherichia*, five were *Klebsiella*, and four were *Aerobacter*. EMB agar was used throughout the study as the collection medium for the survey of the enteric organisms.

Special techniques were used in attempting to demonstrate the presence of *Salmonella* and *Shigella* organisms in the air. All three aerosol sampling methods were tried for this purpose, and samples were taken at all three sites.

Agar plates containing MacConkey (Mac), Salmonella-Shigella (S-S), brilliant green (BG), and bismuth sulfite (BS) agars (Difco) were exposed in the Andersen sampler and by the direct method. Samples were taken with the all-glass impingers using brain-heart infusion broth (Difco). The impinger samples were then filtered through a membrane filter, and the filter was either (1) placed on nutrient pads containing selenite enrichment broth (Difco) and then plated on S-S, BS, or BG agar or (2) plated directly on S-S, BS, or BG agars. Additional samples

TABLE III
Selection and Identification Procedure for Enterobacteriaceae


Collection from Atmosphere
Directly exposed agar plates
Liquid impingement
Andersen sampler
Growth and Isolation on EMB or MacConkey Agar
Triple-Sugar-Iron Agar Slants
------- Discard all negative (=) reactions
Screening Tests for Enterobacteriaceae
Oxidative-fermentative (O-F)
Cytochrome oxidase
Nitrate reduction
Catalase
Reaction
F
Negative
Positive
Positive
------- Discard all other reaction combinations
Standard Differentiation Tests for Enterobacteriaceae
Urease ____ if positive in 4 hours ____ phenylalanase
------- Discard Proteus
Dextrose
Lactose – hold for delayed reaction
Sucrose – hold for delayed reaction
Indol
Methyl red – analyze after 48 hours
Simmons citrate
Lysine
Arginine
Ornithine
layer with vaspar; hold 4 days for delayed reactions
Motility – semisolid agar; 2 days at 37°C, 3 days at 22°C
Indole -
Lactose -
Motility +
Phenylalanase
(Detection of Providence
Serratia
Aerobacter
Klebsiella
Escherichia
Inositol
Malonate
------- Discard all but Klebsiella
Voges-Proskauer
Capsule production
Serology
Salmonella
Arizona
Dulcitol
Salicin
Serology
Shigella
Alkalescens – Dispar
Serology
Gram stain if still unknown

Note: Pasteurella pestis and P. pseudotuberculosis will pass screening tests.

were taken with the impingers using selenite broth or tetrathionate broth (Difco) as the collecting fluid. The broth was left in the impingers after sampling and incubated for 24 hours at 37°C. Following incubation, loopfuls of the broth were streaked for isolation on Mac, S-S, BG, and BS agar plates. The remaining broth was filtered through a membrane filter, which was then placed on an S-S agar plate for incubation. Following colony development, all noncoliform colonies were identified by the procedure given in Table III.

Laboratory Analysis

The cultivation and differentiation procedures used in this study were composites of methods developed by the Texas State Health Department Laboratories and are essentially those recommended by Edwards and Ewing[16] and by Kauffmann.[17] Unless otherwise noted, the various media used were dehydrated Difco products. With the exception of the carbohydrate, alcohol, and urea solutions, all media were sterilized in the autoclave at 121°C.

For identification purposes airborne bac-

TABLE IV
Grouping of Non-Enterobacteriaceae

Group	TSI[a]	O-F[b]	Oxidase	Nitrate	Catalase
Aeromonas-like	+ ⊙	F	+	+	+
Pseudomonas-like	+ −	O	+	+	+
Archromobacter-like	+ −	O	−	− or +	+
Pasteurella – Actinobacillus-like	+	F	+	+	+

[a] TSI reactions: −, no acid; +, acid; ⊙, acid and gas.
[b] O-F reactions: O, acid production by oxidation; F, acid production by fermentation.

teria were collected on agar plates exposed in the Andersen sampler or by the direct plate method. Following incubation each visible colony was streaked for isolation on EMB agar. For each isolation, one of each type of colony that developed was transferred to a triple-sugar-iron agar slant (TSI), and the bacteria were differentiated by the procedure given in Table III.

All media were inoculated from growth on the TSI slants, incubated at 37°C, and examined or chemically tested after 24 hours except where otherwise noted in Table III.

Christensen's urea agar, prepared in the laboratory according to Christensen's original procedure,[21] was employed for the urease test. The motility, nitrate reduction, and oxidative-fermentative media were also prepared in the laboratory according to formulas recommended by the U. S. Public Health Service, Communicable Disease Center.

Purple broth base was used as the basal medium for the fermentation tests. The carbohydrates and alcohols were filter-sterilized in 10% solutions and added aseptically to obtain final concentrations of 1% in the media. Gas production was detected with Durham tubes. The media were incubated for 24 hours before inoculation. Amino acids were added to decarboxylase medium base in concentrations of 0.5%, and all tubes were layered with vaspar following inoculation.

Except for the incubation time (48 hours instead of five days) of the methyl red test, the indole, Voges-Proskauer, and methyl red tests were performed according to *Standard Methods*.[22] Difco instructions were followed for the phenylalanase test.

After biochemical analysis, apparent *Salmonella* and *Shigella* organisms were serologically tested in polyvalent antiserums by the slide agglutination technique. *Salmonella* O, poly A-I, and Vi antiserums were employed. Alkalescens-Dispar antiserum was used in conjunction with groups A, B, C, and D *Shigella* antiserums.

Organisms biochemically determined to be *Klebsiella* were serologically tested in polyvalent 1-6 antiserum for the queilung (Neufield) reaction. Prior to testing, capsule production was enhanced by growth in the medium of Hoogerheide[23] for four to six hours.

Difco dehydrated antiserums were chosen for the serological tests, which were performed according to the methods of Edwards and Ewing.[16]

Isolated bacteria that did not belong to the family Enterobacteriaceae (as determined by the screening tests) were grouped according to their reactions. Organisms that were inactive on TSI agar slants were arbitrarily classified and reported as the *Alkaligenes-Flavobacterium* group. Those active on TSI agar were classified on the basis of their screening test reactions according to Table IV. This broad grouping simply shows the type of organisms deemed most likely from the information obtained.

Results

The results are grouped into two major divisions, just as the study was: the early stages concerned with numbers, and the later, principal portion on identification and comparison.

Numbers of Viable Bacteria Emitted

The results reported here are for samples collected downwind of the aeration units by wind impingement on agar plates.

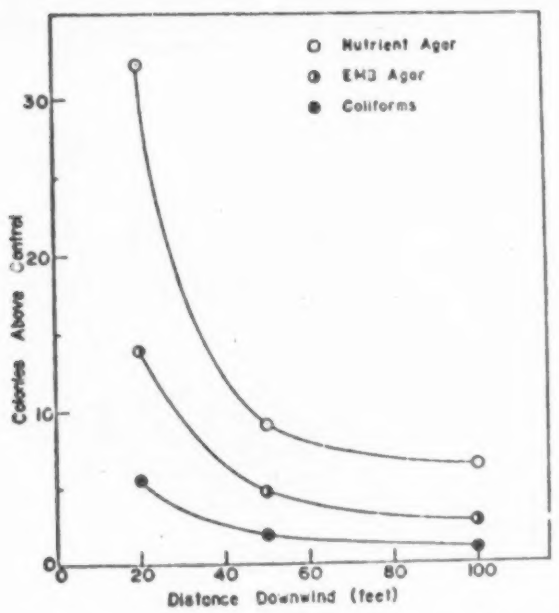


FIGURE 1. Effect of distance on numbers of bacteria found.

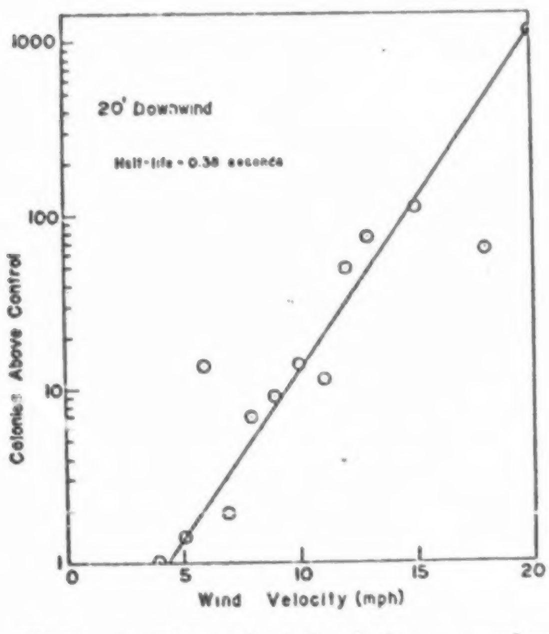


FIGURE 2. Effect of wind velocity on numbers of bacteria found.

Figure 1 shows the effect of distance from the unit on numbers of bacteria found on 35 different days at the Govalle plant. The curves are apparently power functions of the form

$$N = as^b$$

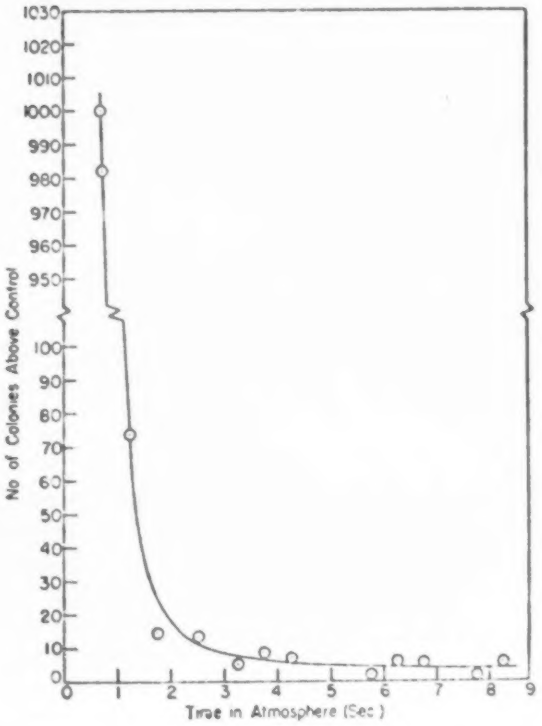


FIGURE 3. Geometrical nature of bacterial die-off in relation to time in the atmosphere.

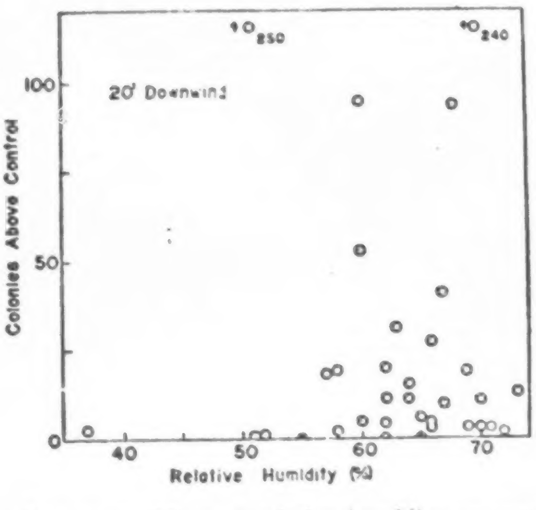


FIGURE 4. Effect of relative humidity on numbers of bacteria found.

where N = number of colonies above control
s = distance downwind of unit (feet).
a, b = regression constants.

An algebraic fitting of the data was deemed justifiable because 35 numbers were averaged for each point and the replicate samples were

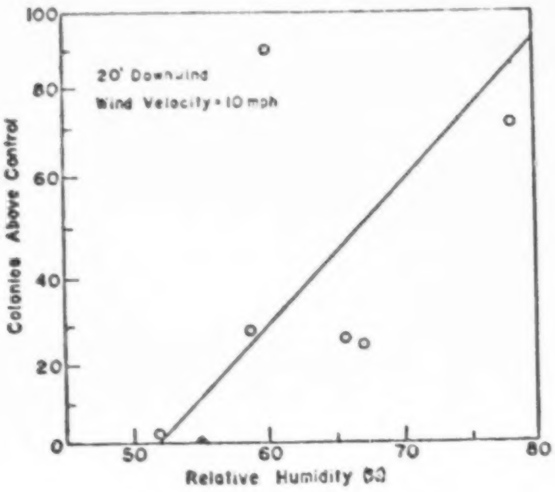


FIGURE 5. Effect of relative humidity on numbers of bacteria found (wind factor suppressed).

in good agreement. This fitting showed *a* values of 745 for nutrient agar, 458 for EMB agar, and 227 for coliforms. The corresponding *b* values were −1.04, −1.18, and −1.25.

The numbers of colonies on nutrient agar at the 20-foot downwind station for samples taken on 55 different days are plotted against wind velocity in Figure 2. The effect of residence time on the viability of the bacteria is easily seen in both Figures 1 and 2. The interrelationships of distance, wind velocity, and residence time showed an effective half-life of 0.38 second at the 20-foot station; half-lives at the other distances differ somewhat from this value because of the probable changes in the predominant species with time, the dispersion of the air mass, and the deviation of the survival from the exponential.

The geometrical nature of bacterial die-off in the atmosphere can be seen in Figure 3. The maximum death rate occurs between 0.7 and 1.0 second after emission. This period is followed first by a rapidly declining decay rate for two seconds, then by an apparent stabilization after three seconds, which results in relatively long survival times for the resistant organisms. The power equation presented above holds only for the first three seconds; then the decay becomes linear with time.

Overall relative humidity data showed almost no correlation with survival (see Figure 4). The only way that an effect could be noted for the relative humidity was to suppress the dominant factor, the wind. Such has been done in Figure 5, where it is indicated (though roughly) that the bacteria survive longer at higher humidities. These data are necessarily incomplete because of the narrow range of relative humidity observed for any one wind velocity during the study.

A comparison of the numbers of bacteria sampled through direct plate impaction by the wind, the Andersen sampler, and the aerosol impinger is shown in Table V. These numbers are averages of data for five sampling occasions. The samples were collected simultaneously at 2 feet above the liquid surface of the aeration unit.

If it is assumed that the difference between the impinger and the Andersen sampler is caused by separation of lumps of organisms, the number of bacteria per particle is 1.35; however, the number of mixed colonies obtained could be surmised to result from two separate particles that impact near enough to the same spot to form a single homogeneous colony.

Generic determinations showed both the Andersen sampler and the direct plate method to be equally effective for recovery of Enterobacteriaceae. The proportions did not hold for other enterics, since direct plate samples from which 98 Enterobacteriaceae were isolated gave only 53 other enterics, while for the Andersen sampler the similar numbers were 101 and 238, respectively. The major difference in the numbers collected by the two methods occurred in the *Alkaligenes-Flavobacterium* group (inactive on TSI agar).

TABLE V
Quantitative Comparison of Sampling Methods

Method	Impinger	Andersen Sampler	Direct Plate
Number per cubic foot	1170	870	220
Relative percent	100	74.4	18.8

TABLE VI
Relative Numbers of Airborne Enterics

Classification	Number of Isolates		Percent of Total	
	Species	Group	Entero-	Enterics
Shigella		0	0	0
Escherichia		54	22	7.5
E. coli	19			
Alkalescens – Dispar	3			
Salmonella		0	0	0
Arizona		0	0	0
Citrobacter		17	6.9	2.4
Betheada – Ballerup	1			
Klebsiella		77	31.5	10.7
K. pneumoniae	43			
K. oxytocum	28			
Aerobacter		51	20.8	7.1
A. aerogenes	32			
Hafnia		3	1.2	0.4
Serratia		14	5.7	1.9
Proteus		8	3.3	1.1
Providence		11	4.5	1.5
Erwinia		0	0	0
Unknown		10	4.1	1.4
Total Enterobacteriaceae		245	100	34.0
Non-Enterobacteriaceae		476		66.0
Total enterics		721		100

Airborne Enterics

From samples taken immediately adjacent to the aeration tanks, group typings were made on more than 700 enterics, and generic classifications were done for 245 members of the family Enterobacteriaceae. All visible colonies were biochemically analyzed for each sample taken; the results, representing the actual percentage of occurrence, are tabulated in Table VI. The bacteria cultured on EMB agar were found to represent 56% of the total colony count on nutrient agar. These data indicate that, of the 1170 bacteria per cubic foot that are emitted, enterics numbered 655, including 222 (or 19% of the total) Enterobacteriaceae.

The most significant aspect of the data in Table VI is the large numbers of *Klebsiella* organisms found in the atmosphere. All species of this genus are known pathogens of the respiratory tract,[24,25] and its members comprised nearly one-third of all Enterobacteriaceae isolated. Six per cent of all bacteria emitted from the activated sludge unit belong to the *Klebsiella* group. From data collected in this study, a man working within 5 feet of the downwind edge of an aeration tank when the wind velocity is 10 mph, perhaps taking a sludge sample, could be expected to inhale a viable *Klebsiella* every two breaths, based on a tidal volume of 1 liter.

Both *Aerobacter* and *Proteus* organisms have been repeatedly implicated in respiratory infections.[26,27] These two, combined with *Klebsiella*, constitute 55.6% of the Enterobacteriaceae, 18.9% of the enterics, and 10.5% of the total bacteria emitted from the activated sludge units.

The most significant airborne enteric pathogens recovered were members of the Providence group. Members of the Alkalescens-Dispar and Bethesda-Ballerup groups are also potential enteric pathogens, but they were present in smaller numbers.

The large number of indole-positive *Klebsiella* was a surprising result, since such organisms, although frequently reported,[28,29] have never been isolated in large numbers from any source. The *K. oxytocum* reported here followed the classic definition of *K. pneumoniae* except for the production of indole. On the basis of Lautrop's work,[15] they are equal to *K. pneumoniae* in respiratory pathogenicity.

Of the 77 *Klebsiella* isolated, 75 showed encapsulation after incubation for four hours in the medium of Hoogerheide, and 19 gave positive slide agglutinations in *Klebsiella* poly 1-6 antiserum; however, only two slide ag-

TABLE VII
Relative Numbers of Non-Enterobacteriaceae

Group	Number of Isolates	Percent of Total
Aeromonas-like	36	7.6
Pseudomonas-like	27	5.7
Achromobacter-like	14	2.9
Pasteurella–Actinobacillus-like	55	11.5
Alkaligenes–Flavobacterium-like	344	72.3
Total non-Enterobacteriaceae	476	100

glutinations could be confirmed by positive quellung reaction.

An unexpected result was found in the relative numbers of the *Proteus* and Providence groups—the latter dominated, which is the reverse of stool specimens. However, the usual order occurred in the raw sewage emissions. Of the eight *Proteus* organisms reported in Table VI, three were H_2S-positive on TSI agar slants.

The absence of *Salmonella*, *Shigella*, and Arizona isolations is not too surprising, despite numerous reports of their presence in sewage and activated sludge. They are so few in number that the methods used to recover them from such environments usually entail continuous sampling for periods of time in excess of 24 hours, and even then only partial success is obtained.[10,11]

The isolated non-Enterobacteriaceae were broken down into groups based on the classification system given in Table IV. The results are tabulated in Table VII. As expected from reported studies of the bacterial population of activated sludge,[19,29] the vast majority of the non-Enterobacteriaceae belonged to the *Alkaligenes-Flavobacterium* (biochemically inactive) group. The number of *Pseudomonas*-like bacteria isolated was considerably smaller than expected, but some *Pseudomonas* species are inactive on TSI agar and would be grouped with the *Alkaligenes-Flavobacterium*. One such species, *Pseudomonas maltophilia*, which has a very distinctive TSI reaction (− H_2S), was found.

Spread of Airborne Enterics

Information concerning the survival of the various groups of the Enterobacteriaceae in the atmosphere was obtained by analyzing samples taken at the downwind stations. The results of this study are tabulated in Table VIII. As expected, the results show that the capsule formers (*Klebsiella-Aerobacter*) are better suited to survival than the nonapsulate

TABLE VIII
Spread of Airborne Enterics

Classification	Distance Downwind from Source (feet)					
	20		50		100	
	Species	Group	Species	Group	Species	Group
Enterobacteriaceae						
Escherichia		14		3		3
E. coli	4		1		2	
Alkalescens–Dispar	1		0		0	
Citrobacter		4		2		0
Klebsiella		18		9		10
K. pneumoniae	11		4		4	
K. oxytocum	5		5		5	
Aerobacter		18		4		6
A. aerogenes	8		1		3	
Hafnia		0		1		1
Serratia		2		1		2
Proteus		0		1		0
Providence		4		1		1
Unknown		2		0		0
Total		62		22		23
Non-Enterobacteriaceae						
Aeromonas-like		0		0		0
Pseudomonas-like		0		3		8
Achromobacter-like		2		2		3
Pasteurella–Actinobacillus-like		4		5		4
Alkaligenes–Flavobacterium-like		62		65		70
Total		68		76		85
Total isolates		130		97		108

TABLE IX
Klebsiella Survival

Distance Downwind (feet)	*Klebsiella* as Percent of Total Count			
	0	20	50	100
EMB agar	10.5	13.8	9.3	9.3
Nutrient agar	6.0	7.8	5.2	5.2

TABLE X
Size of Viable Airborne Particles

Stage of Sampler	Size Range of Particles (μ)		Particles per Stage as Percent of Total Station-Feet Downwind from Unit				
			0	3	20	50	100
1	>8.2		38.4	15.1	8.1	20.0	24.4
2	5.0 – 10.4		22.0	32.0	23.0	29.7	22.3
3	3.0 – 6.0	Lung penetrating	21.4	31.7	38.2	17.0	27.6
4	2.0 – 3.5		11.8	17.1	17.2	18.1	12.2
5	1.0 – 2.0	Alveolar retention	4.0	3.5	9.7	7.6	6.5
6	Up to 1.0		2.4	0.6	3.8	7.6	7.0

group (*Escherichia*-Citrobacter). Of the samples taken in the immediate vicinity of the activated sludge units (see Table VI), the capsule formers comprised 52% of the Enterobacteriaceae. This percentage steadily increased with distance downwind and reached 70% of the total at the 100-foot station. The acapsulate group, by contrast, dropped from 29% in the first group of samples to 13% in the samples taken at the 100-foot station.

Although the Enterobacteriaceae in general are considered to be less capable of survival in the atmosphere than most other types of bacteria, the *Klebsiella* strains were found to be nearly as resistant to desiccation as the average of the bacteria sampled in this study (see Table IX). The increase in the relative percent of *Klebsiella* at the 20-foot station probably indicates that, because they are encapsulated, *Klebsiella* have a longer period of equilibration.

In an attempt to evaluate the possible attenuation of virulence of *Klebsiella* organisms with time in the atmosphere, a result reported for other pathogens,[30] *Klebsiella* recovered at distances of 20, 50, and 100 feet were checked for capsule production and compared with those sampled at the source. The percentages of isolates capable of capsule production at distances of 0, 20, 50, and 100 feet were 97.5, 78.0, 55.5 and 60.0, respectively. Apparently, loss of the capsule-producing function occurs fairly rapidly during the equilibration period, but those that still retain the capability when equilibrium is reached suffer no further loss. It should be noted that capsule production is limited by the methods used in this study, and the apparently acapsulate strains may be capable of producing capsules if cultivated in a more suitable environment.

Bacterial Aerosol Size

Since the particle size plays an important role in lung penetration and retention, certain size data were deduced from the Andersen sampler data. This relation is properly drawn because the sampler is designed to separate particles by size. The data are presented in Table X. While the data are admittedly variable and the sizing method is lacking in precision, it is demonstrated that a considerable number of the collected particles could penetrate into and be retained by the human lung.

Control Sample Types

Fifty-eight of the control sample colonies (collected upwind of the aeration units) were biochemically typed—ten were of the family Enterobacteriaceae. Of these, five were *Klebsiella* (all *K. oxytocum*), three were intermediate *Aerobacter* species, and two were members of the Providence group. The average concentration of the control samples, using the Andersen sampler, was six per cubic foot on nutrient agar. That the controls were

TABLE XI
Comparison of Viable Emissions

Classification	Activated Sludge Units					Grit Remover		
	Austin		Round Rock					
	Entero- (%)	Enterics (%)	Entero- (%)	Enterics (%)	Isolates (%)	Entero- (%)	Enterics (%)	Isolates (%)
Shigella	0	0	0	0	0	0	0	0
Escherichia	22	7.5	16.7	4.0	5	18.2	8.1	10
E. coli								
Salmonella	0	0	0	0	0	0	0	0
Arizona	0	0	0	0	0	0	0	0
Citrobacter	6.9	2.4	3.3	0.8	1	7.3	3.2	4
Klebsiella	31.5	10.7	46.7	11.3	14	52.8	23.6	29
K. pneumonia					4			15
K. oxytocum					10			10
Aerobacter	20.8	7.1	16.7	4.0	5	10.9	5.7	7
A. aerogenes					1			1
Hafnia	1.2	0.4	0	0	0	0	0	0
Serratia	5.7	1.9	3.3	0.8	1	1.8	0.8	1
Proteus	3.3	1.1	3.3	0.8	1	7.3	3.3	4
Providence	4.5	1.5	0.7	1.7	2	0	0	0
Erwinia	0	0	3.3	0.8	1	0	0	0
Total	100	34.0	100	24.2	30	100	44.7	55
	Non-Entero-		Non-Entero-			Non-Entero-		
Pseudomonas-like	5.7	3.8	9.5	7.3	9	1.5	0.8	1
Achromobacter-like	2.9	1.9	2.1	1.7	2	2.9	1.6	2
Pasteurella–Actinobacillus-like	11.5	7.6	6.4	4.8	6	17.7	9.8	12
Alkaligenes–Flavobacterium-like	72.3	47.7	82.0	62.0	77	67.7	37.4	46
Aeromonas-like	7.6	5.0	0	0	0	10.3	5.7	7
Total	100	66.0	100	75.8	94	100	55.3	68
Total enterics		100		100	124		100	123

influenced by the other units was shown in the results of several samples that were taken upwind of the entire treatment plant; these samples showed no Enterobacteriaceae.

Comparison Studies

In Table XI, the viable airborne bacteria emitted from the Austin activated sludge plant are compared with the emissions from the grit remover (raw sewage) at the same plant and from the activated sludge units at Round Rock, Texas. These data reveal considerable similarity between the emissions from the two activated sludge plants. The same groups of bacteria were dominant at both plants, and the various organisms were found in comparable percentages. The most noticeable difference was the absence of *Aeromonas*-like organisms in the Round Rock sample.

Klebsiella, Escherichia, and *Aerobacter* species occurred most frequently among the Enterobacteriaceae in the raw sewage emissions just as they did from the activated sludge units; however, the fraction of the total enterics that were Enterobacteriaceae was considerably greater. The primary cause of this effect was the significantly larger numbers of *Klebsiella* in the raw sewage emissions.

Conspicuously absent from the airborne raw sewage bacteria were members of the Providence group. By contrast, members of the *Proteus* group increased to 7.3% of the Enterobacteriaceae, and all isolates were H_2S-positive on TSI agar slants.

Special Studies for Pathogens

As expected, no *Salmonella* or *Shigella* organisms were collected during the normal procedures. Because of the importance usually attached to these species, rather strong efforts were made to find such organisms by special studies. Samples from five minutes to 14 hours were tried with selenite broth in the impinger. Still no *Salmonella* or *Shigella* was found, although a *Salmonella*-like organism was collected at the Round Rock plant. The pseudo *Salmonella* was an Enterobacteriaceae recovered from selenite broth and isolated on S-S agar. It gave a positive slide-agglutination in *Salmonella* poly A-I antiserum and had the following biochemical reactions: Triple sugar iron agar, ∓; positive on methyl red, citrate, lysine, arginine (delayed), ornithine, motility, and salicin (ten-day delayed); acid and gas from glucose; negative on lactose, sucrose, urease, indole, phenylalanase, and dulcitol. No positive identification could be made by the methods employed in this study, but, according to Edwards and Ewing, the organism was eliminated from the *Salmonella* classification by the salicin reaction.

Sampling for several hours was tried with the Andersen sampler using various agar media recommended for the cultivation of *Salmonella* and *Shigella* (MacConkey's, bismuth sulfite, brilliant green, and Salmonella-Shigella). Several false *Salmonella* reactions were obtained on bismuth sulfite agar; all proved to be *Klebsiella oxytocum*.

Conclusions

The following conclusions have been reached, based on analysis and evaluation of the collected data.

1. The bacterial population of the air is significantly increased by passage over an activated sludge waste treatment unit, from about eight per cubic foot on the upwind side to 1170 per cubic foot on the downwind side.

2. Despite a rapid die-off of bacteria during the first three seconds they are airborne, the increase in bacterial population persists for a considerable time and distance—the distance being strongly dependent on the wind velocity.

3. Bacteria of the family Enterobacteriaceae, including species of known pathogenicity, are emitted in large numbers. They make up 19% of the total bacterial emissions. *Klebsiella* species, proved pathogens of the respiratory tract, are the most numerous of the Enterobacteriaceae; they represent 6% of all bacteria emitted.

4. The Enterobacteriaceae that are potential pathogens of the respiratory tract *(Klebsiella, Aerobacter, Proteus)* are far more numerous than the enteric pathogens. They make up nearly 50% of the family, and 10.5% of all bacteria emitted. In addition,

Klebsiella and *Aerobacter* species, particularly *Klebsiella*, are more resistant to the effects of dessication than the other species.

5. About 40% of the viable bacteria in the immediate vicinity of the activated sludge units are associated with an aerosol size that permits lung penetration (5 microns or less). This percentage increases to nearly 70% at a downwind distance of 20 feet.

6. There exists a definite possibility of airborne infection from activated sludge units.

7. *Klebsiella* are the best indicators of bacterial air pollution from sewage sources.

Note: The preliminary data of this work, which pertained only to numbers, were previously published.[31]

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Coliform Aerosols Emitted by Sewage Treatment Plants

Abstract. *Development of the science of aerobiology has furnished a tool for the investigation of potential sources of microbial aerosols. An investigation of aerosols emitted by trickling-filter sewage treatment plants revealed that coliforms were indeed emitted and have been sampled to a distance of 0.8 mile (1.2 kilometers) downwind. Factors affecting survival of* Escherichia coli *are presented.*

The association of pathogenic microorganisms with water and sewage has been known since 1855 when John Snow in London traced the source of a cholera epidemic to a sewage-contaminated well (*1*). Since that time human fecal waste has been found to contain the specific etiologic agents of some diseases, many of which are intestinal diseases. Although they are commonly transmitted through the mouth, experimental infection of the chimpanzee by inhalation of large numbers of aerosolized typhoid organisms has been demonstrated (*2*). However, there are other organisms, whose respiratory dosage is comparatively low, which are excreted in the fecal waste of infected persons. Some of these are: various respiratory viruses and the microorganisms that cause brucellosis, encephalitis, hepatitis, poliomyelitis, psittacosis, and tuberculosis.

The development of the science of aerobiology in the last few years provided a tool that has encouraged us to investigate potential sources of aerosolized microorganisms. Schultze (*3*), in 1943, studied the fallout of small droplets resulting from watering crops with liquid raw sewage from an overhead sprinkling irrigation system in Germany. Using a primitive sampling technique, he placed open petri dishes at varying distances downwind from the sprinklers and was able to demonstrate the presence of *Escherichia coli* in the airborne droplets. Spendlove (*4*), in 1956, demonstrated the aerosolization of bacteria from a rendering plant and was able to recover airborne organisms downwind from the plant with the use of Andersen samplers.

Modern trickling-filter sewage treatment plants, because of the nature of their design, may be an exceptional source of aerosolized microorganisms. As we contemplated the spectrum of potential aerosols, it became plausible that the variety of organisms that may be aerosolized is almost unlimited. The trickling filter used in the secondary treatment of sewage sprinkles raw sewage into the open air onto a rock ballast to dose the filter bed. The process of sprinkling the raw sewage into the air would be expected to aerosolize a portion of the material and create micron-size particles (Fig. 1). Sewage varies considerably in its microbial count, but counts of from 10^6 to 10^7 organisms per milliliter are common (*5*). A sewage plant processing several million gallons of sewage per day has the potential, therefore, of providing a microbial aerosol source of considerable magnitude on a continuous basis.

Two municipal sewage plants, ranging in treatment capacity from 6 to 25 million gallons (1 gallon = 3.7 liters) of sewage per day, were studied. The plants were located in the Intermountain West and the studies were conducted during May 1970. Andersen samplers (*6, 7*), connected to a portable field vacuum source, were used to collect the aerosols near and downwind of sewage treatment plants. The Andersen sampler aspirates at the rate of 1 cubic foot (28.3 liters) per minute and impinges the collected organisms on a nutrient medium placed in petri plates positioned within stages of the sam-

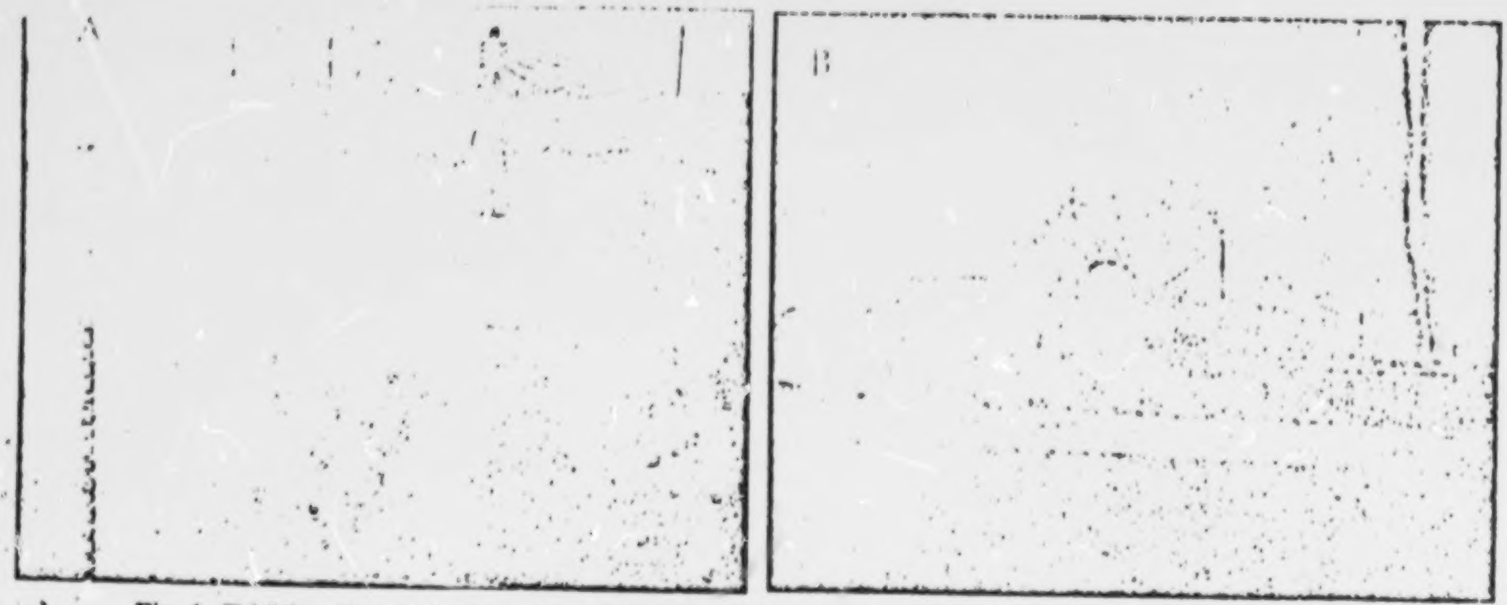

Fig. 1. Trickling filter bed from above (A) and looking along the boom (B). Note the droplet formation.

pler. Each stage collects particles of a different range of sizes, stage 1 collecting the largest particles and stage 6 the smallest.

Three different mediums were used in the studies. Casitone agar was used for the collection and growth of the general microbial population; Endo's medium and eosin–methylene blue medium, for the selective growth of the coliform organisms. Samples were taken from points in the immediate vicinity of the trickling filters and up to distances of 0.8 mile (1.2 km) downwind. Collections of aerosols were made during daytime and nighttime periods, with sampling periods varying from 5 minutes to 1 hour. Upwind controls were collected on each test, and the same types of mediums were used for these controls as for the downwind samples. All plates of nutrient mediums were incubated for a minimum of 24 hours at 37°C.

Substantial numbers of coliforms were aerosolized from the trickling filters. The concentration of aerosol particles collected near the source seemed to be most affected by the size of the source and the velocity of the wind. Plant 1 had only two small trickling filter beds separated by some distance. Plant 2 had two sets of four beds each, with each set of four located in close proximity to each other. As the emitted particles traveled downwind, the relative humidity became more important. If the test was conducted during daylight hours, solar radiation had a deleterious effect. Overcast skies could be expected to reduce somewhat the effect of solar radiation. Generally speaking, high wind velocities, high relative humidity, darkness, and low temperatures would be expected to give the

Table 1. Coliform and total bacterial aerosol particle count from trickling filters (1 foot = 0.3 m, 1 yard = 0.9 m).

Plant	Distance from source	Test conditions				Coliform particles per cubic meter		Total viable particles per cubic meter	
		Wind speed (mile/hr)	Relative humidity (%)	Temp. (°F)	Time of day	Downwind	Upwind control	Downwind	Upwind control
1	50 feet	2–4	25	70 (21.1°C)	10:00 a.m.	364		3,911	
1	50 feet	1–3	25	70	10:30 p.m.	300		19,737	
1	0.25 mile	1–3	25	70	10:30 p.m.	5			
1	110 feet	10–15	70	50	11:00 a.m.	867	0	3,692	51
1	200 yards	10–15	70	50	11:00 a.m.	30	0		
1	130 feet	8–10	65	46	8:30 p.m.	490	0	2,435	574
1	300 yards	8–10	65	46	8:30 p.m.	183	0	3,396	574
1	0.5 mile	8–10	65	46	8:30 p.m.	109	0	622	574
1	130 feet	5–10	25	65	8:30 p.m.	105	0	2,493	1,676
1	200 yards	5–10	25	65	8:30 p.m.	42	0	1,400	1,676
2	300 yards	5–10	25	65	8:30 p.m.	193	1		
2	600 yards	5–10	25	65	8:30 p.m.	26	1		
2	0.8 mile	5–10	25	65	8:30 p.m.	4	1		
2	100 yards	5–10	15	68	9:00 p.m.	159	1	914	607
2	300 yards	5–10	15	68	9:00 p.m.	70	1	817	607
2	600 yards	5–10	15	68	9:00 p.m.	7	1	289	607
2	0.8 mile	5–10	15	68	9:00 p.m.	3	1	856	607
2	140 feet	3–7	55	59	10:00 p.m.	934	1		
2	300 yards	3–7	55	59	10:00 p.m.	73	1		

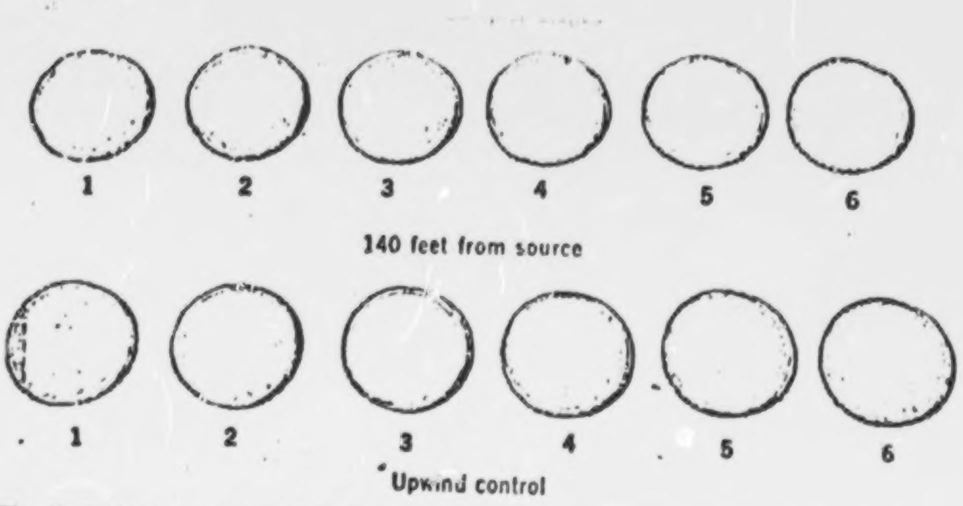

Fig. 2. Petri dishes containing Endo's medium, from various stages of the Andersen sampler. Note high concentration of coliform colonies on the upper set which were located downwind from the trickling filter bed shown in Fig. 1 (1 foot = 0.3 m).

greatest recoveries, both close in and at greater downwind distances. Relative humidity is known to have a pronounced effect on the survival of airborne *E. coli*; usually, the humidity during these studies was low. Low humidities were shown by Brown (*8*) to have a strongly adverse effect on survival of aerosolized *E. coli*. Positive recoveries of coliform organisms were made at night up to a distance of 0.8 mile from the source (which was the maximum distance sampled). Greater distances of downwind travel may be expected under more ideal conditions. Only a qualitative investigation of aerosol emission has been made to date, and Table 1 shows the number of coliform colonies and total number of bacterial colonies that were recovered under the various conditions of the study.

The counts presented in Table 1 are corrected for positive hole count as reported by Andersen (*7*). It should be noted that counts reported are derived from aerosol particles collected on the various stages of an Andersen sampler. Each particle collected theoretically gives rise to one colony; however, most of the particles collected contained more than one bacterial cell. Andersen (*7*) estimated that particles on stage 5 contained 1 to 4 cells; stage 4, 3 to 10 cells; stage 3, 9 to 25 cells; stage 2, 22 to 200 cells; and stage 1, 150 or more cells. In any event, the particle count presented is probably only a fraction of the total cell count. The heaviest counts were observed on stages 2, 3, and 4, with lower counts on stages 1 and 5. Few if any colonies were observed on stage 6. Particles recovered on stages 3 and below are known to be in the respirable size range; hence, if pathogens were present, they would be most infective in this size range. Particles larger than 5 μ in diameter (that is, those collected on stages 1 and 2) would be deposited in the upper respiratory tract but also may be swallowed and enter the gastrointestinal tract where many enteric pathogens are effective.

Since *E. coli* and other coliforms are the universal indicator of fecal pollution, it is apparent that the discovery of aerosolized coliform organisms arising from sewage treatment plants may portend a public health concern. Investigations should be conducted to attempt to identify other bacterial, fungal, and viral aerosols generated by sewage treatment facilities.

Note added in proof: After our report was submitted for publication, it was called to our attention that C. R. Albrecht had performed research of a somewhat similar nature. Albrecht submitted a thesis to the University of Florida in 1958 entitled "Bacterial Air Pollution Associated with the Sewage Treatment Process." We hereby acknowledge Albrecht's work.

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TECHNICAL AND LEGAL ASPECTS OF WATER RESOURCES MANAGEMENT

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THE MICROBIOLOGY OF DOMESTIC AND INDUSTRIAL WASTE

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Many of the waste gases, liquids and solids eventually must pass through the digestive environments created by the micro-organisms. Waste enriched with methane, urine, or asphalt will tend to select and to promote the development or adaptation of soil micro-organisms capable of using these substrates. Waste materials which are either resistant to microbial attack or are produced in quantities exceeding the degradative capacities of the micro-organisms will accumulate and place an undesirable burden on the local environment. The micro-organism is a living, competing, reproducing entity which responds to favourable treatment. Its appetite is enormous, capable of utilizing 1000 to 10,000 times its own weight of sugar per hour. Possibly one of the reasons for this capability is the large surface/volume ratio. A bacterium with a cell diameter of 0.0005 mm will have a surface/volume ratio of 120,000.

The micro-organism may be considered to be a very efficient manufacturing or degrading plant where raw material may be converted into desirable products. If an effluent, as an example, contains a high proportion of hydrocarbons such as benzene, phenol, oil, or linear alkylated sulfonate detergent, a microbiological flora will develop in the sewage which will utilize these substrates. It is not surprizing that petroleum consuming organisms are found in nature for small quantities of hydrocarbon occur naturally in many tissues and environments (1). We have often seen oily films on stagnant marsh pools and have heard of the occurrence of n-heptane in the distillate of the pine tree. In fact the hydrocarbons occur so frequently in nature that approximately one out of four bacteria and fungi can utilize them.

There are two important points to remember about the organisms when hydrocarbons form a major constituent of a sewage effluent. First, chemical combines with a number of compounds found in streams and sewage and depending on the polymer size, surrounding acidity and various interactions it forms a flocculent. In addition to being a flocculating agent lignosulphonates are used in an ever increasing amount in a number of industrial applications. They are used as adhesive, dispersing, binding and stabilizing agents in the construction, mining, chemical and agricultural industries. In fact, our own laboratory has used successfully the lignosulfonates to stimulate the microbial utilization of petroleum and petroleum waste (7). However, a potential problem may exist as our studies indicate, lignosulphonate can replace the protein from frozen salmon sperm. Whether or not the lignosulphonates interfere with the genetic material of the many plants and animals found in natural waters remains to be determined.

Approximately 30% of the sulfite spent liquor solids is carbohydrate material of which possibly 60% is readily fermentable. This supply of fermentable carbohydrate rather than being deposited in a sewage system forms a major source of sugar for the production of alcohol and a potential source for mushroom culture, vitamin B_{12}, and many other products.

In biological treatment systems sugar will disappear rapidly under both anaerobic and aerobic conditions. Under anaerobic conditions, one pound of sugar dissolved in 100 gallons of effluent will disappear in approximately 30 minutes (8). Of course, many nutrient factors will either interfere with or accelerate bacterial activity. The inorganic nitrate formed in aerobic sewage treatment can be removed by anaerobic conversion of nitrate to gaseous nitrogen. Phosphate can be removed by the addition of multivalent metals such as iron, aluminum and calcium forming the insoluble phosphate flocs.

Optimum conditions for rapid substrate utilization and biological flocculation are incompatible. Bacteria and most biological materials contain a net negative charge and can combine with oppositely charged materials to form very large particles which separate as a sludge from solution. Polyelectrolytes such as polyacrylamide and fire ashes containing polyvalent metals are commonly added to sewage to increase the flocculation rate and to dehydrate the sludge. Excess carbohydrate, desirable for rapid fermentation, interferes with flocculation.

There are, as in all communities, microbial villains which are capable of thriving on substrates valued for one reason or another. Not too many years ago natural control over plant and animal disease was supplied by physical isolation and the development of resistance. Today, as our human population grows into a logarithmic division, control of human numbers barring common sense will be exercised by disease, lack of food, and pollution as is found to occur in any densely living biological population. Just as micro-organisms can adapt to changing sewage composition, they will occasionally overcome human defences. Thus it is important that the planners of sewage systems recognize the potential health hazards of sewage and interrupt the transfer of the pathogen in sewage disposal. Well, what do we know about the microbiology of domestic and animal waste? First, we know that approximately 37 pounds of wet sewage solids are produced per person per year (9) and secondly, that only approximately 60% of the available bacteria can be isolated and characterized from activated sludge by using standard microbiological techniques. The remaining 40% of the bacteria require an extract of the sludge to be added to the conventional medium to support growth (10).

We are concerned over the microbial composition of sewage from several important points of view; the rate at which the sewage flora will utilize the incoming effluents, the ease of sludge flocculation and separation and the potential health hazard of sewage.

It is the last point upon which I wish to enlarge. Forty percent of the faecal matter from humans and domestic animals is composed of bacteria, mainly represented by the organism *Escherichia coli*. This organism is a member of a group of organisms labelled the Enterobacteriaceae because their members are common inhabitants of the intestinal tract.

Other members of this group include the pathogens *Salmonella*, an intestinal pathogen causing enteric fevers and food poisoning;

Klebsiella, a cause of pneumonia and other inflammations of the respiratory tract, *Shigella*, a cause of dysentery; and the soil organisms belonging to the genera *Proteus* and *Aerobacter*.

The majority of the strains of the bacterium *Escherichia coli* utilize the nutrients of the feces and are not pathogenic to man. There are exceptions, however, certain strains of *E. coli* can cause infantile diarrhoea resulting in serious epidemics in nurseries and hospitals.

The identification of *E. coli* in a food or in a water sample is indicative of faecal or sewage contamination. It is also an indicator of the risk of the enteric pathogens.

The use of antibiotics for the control of disease in humans and in animals and for promoting growth and more efficient feed utilization in domestic animals is widespread. A serious consideration in the use of antibiotics is the appearance of antibiotic-resistant strains especially among the *E. coli*. The seriousness of the situation is not in that an antibiotic-resistant strain of *E. coli* is formed but that this strain can transfer its resistance to other genera of the Enterobacteriaceae, in particular the *Salmonella*, *Klebsiella* and *Shigella* (11).

Sewage sludge is disposed of in three different ways - by spreading on land as a fertilizer, as a land fill and by discharging into waterways. All three methods of disposal create a health hazard.

Just how serious is this situation? It is known that *Salmonella* when present in faecal material deposited on a stone wall or in soil will maintain viability for at least 307 days (12). If the medium supports growth the organism will grow and multiply at temperature between 7°C-46°C. The organism is killed by exposure to 50°C for one hour.

The factors which determine the length of time a pathogen will survive in soil or on the surface of a plant are unknown but include the competition with other bacteria. Vegetable crops such as the tomato which have been artificially or naturally contaminated contain viable *Salmonella* for one week following application (13).

Cattle slurry which consists of a mixture of faeces and urine with a minimum of bedding material all suspended in a large quantity of water is a source of disease transmission. One hundred cows produce approximately 20,000 gallons of this slurry per week. *Salmonella dublin*, *Salmonella typhimurium*, *E. coli*, *Staphlococcus aureus* and *Brucella abortus* survived for at least eleven weeks in the slurry. Two additional pathogens found in faeces, *Mycobacterium tuberculosis* and *Mycobacterium johnei*, survive in the slurry and the pasture for many months (14). None of the above bacteria however, were found to multiply in the slurry. The spore formers, *Clostridium tetani* commonly found in cattle faeces and *Bacillis anthracis* may build up. The anthrax bacilli are excreted from the animal a short time prior to death and thus can gain access to the cattle slurry before the disease is diagnosed. If this infected slurry is now spread in the field, the soil will become permanently contaminated. Two other diseases dangerous to man may be found in cattle slurry; Q fever and leptospirosis. Q fever which causes a fever often accompanied by pneumonitis in man can be spread by wind in a dry aerosol form from a rain gun and leptospirosis can infect humans via several difficult routes and causes infectious jaundice. This latter organism in sewage has been known to enter water courses and swimming areas.

In addition to the above diseases, the Helminth parasitic worms may also be spread to man and animals through sewage. The ova of *Ascaris lumbricoides* is commonly found in sewage.

The virus of the highly infectious foot and mouth animal disease is excreted in the faeces of the animal before the animal is clinically ill. This virus should survive for a short period at least in cattle slurry.

Recently there has been a growing interest in the determination of virus particles in sewage. These tests are time consuming and laborious but certainly necessary to determine the potential health hazard of sewage treatment systems. The measurement of the coliform anisms in chlorinated sewage may not give an indication of the inactivation of the more resistant virus (15). The virus particle may occur in free form or be combined to organic sewage debris. The concentration of virus in raw sewage can be as high as two infectious particles per milliliter (16).

To assay the virus content of sewage the virus can be isolated and concentrated by a number of techniques (17, 18, 19). Following isolation the virus concentrate is inoculated onto animal kidney cultures and incubated for 10 days. The number of plaques which appear are a count of the infectious virus particles.

The health hazard of wind-borne bacteria from activated sludge units is also of interest. The bacterial population of air is increased by passage over an activated sludge waste treatment unit. For example, the bacterial count has been found in one particular sludge unit to be about 8 per cubic foot on the upwind side and 1170 per cubic foot on downwind side (20). In this latter case the family Enterobacteriaceae represented 19% of the total bacteria in the aerosol of which Klebsiella a known respiratory tract pathogen represented 6%. In fact, the Klebsiella is the best indicator of bacterial air pollution from sewage sources. Randall states "that a man working 5 feet off the downward edge of an aeration tank when the wind velocity is 10 mph, perhaps taking a sludge sample, could be expected to inhale a viable Klebsiella every two breaths. The bacterial death rate in the aerosol will depend on the resistance of the organism to desiccation ranging from a maximum death rate at 0.7 to 1.0 seconds after emission to a long undetermined survival time.

Since many sewage or waste treatment designers have not been too concerned with the health hazards of sewage, the reports dealing with control measures are not too numerous. In the activated-sludge unit we know that the ciliated protozoa are principally responsible for destroying E. coli and possibly other bacteria (21), as well as improving the clarity of the effluent (21). If the sludge is composted er aeration and the temperature of the compost ranges between 60°-70°C, the poliovirus is inactivated within the first hour, Salmonella va of Ascaris and Candada albicans are inactivated within 43 hours (9).

If sludge is maintained at pH 11.5 for 1 hour the Enterobacteriaceae is reduced by more than 99%. On the other hand the m positive bacteria are not destroyed at this high pH (23). Chlorine will reduce the coliform count to less than 100 per 100 ml in 2 hours contact time with 8 mg chlorine per liter (15). However the coliform count may not give an accurate picture of the death of the other pathogens.

In conclusion, I would like to stress that micro-organisms are very aggressive and hardworking individuals. Under proper direction and control great benefits may be derived from these silent workers.

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VIRUSES IN WASTE, RENOVATED, AND OTHER WATERS

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VIRUSES IN WASTE, RENOVATED, AND OTHER WATERS[*]

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Many viruses are excreted with the feces of infected individuals. These viruses multiply in the alimentary canal of man, or have access to it. With viruses of animal, plant, and bacterial origin, they abound in sewage and in receiving rivers and streams.

The numbers of viruses of human origin in water are small when compared with the numbers of bacteria excreted by man. Viruses do not multiply outside of living susceptible cells; thus, viruses decrease in numbers in the receiving waters. The importance of viruses in water, however, does not stem from numbers. Rather, their importance is manifest in their ability to infect man when present even in small numbers. The smallest amount of virus capable of infecting our most sensitive indicators, cells in culture, is usually capable of producing infection in man (Table 1 [1,2]).

Because such minimal amounts of viruses can produce infection in man, the total removal of such viruses from any water that man might consume is justified. The viruses of human origin that occur in water and are of major concern to us are shown in Table 2.

Viruses Important in Water

All of these viruses can be differentiated from each other serologically and, to some degree, by other means.

Polioviruses. The polioviruses consist of three serologically distinct types each of which can produce paralytic disease in man.

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These viruses may also produce aseptic meningitis, and various minor disorders as well.

Coxsackievirus A. The coxsackieviruses* of group A comprise almost 30 serotypes all of which produce characteristic lesions in newborn mice. Some of these viruses produce herpangina, aseptic meningitis, and rubella-like rashes in man.

Coxsackievirus B. The coxsackieviruses of group B comprise six serotypes, all of which produce characteristic lesions in newborn mice that are different from those produced by coxsackievirus A serotypes. All of the group B viruses can cause aseptic meningitis in man. Viruses of this group also may produce acute infantile myocarditis, pleurodynia, and other disorders in man.

Echoviruses. The echovirus group** now consists of more than 30 serotypes. Members of this group can produce aseptic meningitis, diarrhea, rubella-like rashes and other ailments.

The polioviruses, coxsackieviruses of groups A and B, and the echoviruses, belong to a major group of viruses, the picornaviruses+. Two other major virus groups are significant in water, the adenoviruses and the reoviruses.

Adenoviruses. The adenoviruses are a group of larger viruses consisting of more than 30 serotypes. Members of this group are responsible for many of the respiratory diseases of childhood. Other serotypes produce acute respiratory disease outbreaks in closed populations such as military training camps, and institutions. Some serotypes produce acute epidemic keratoconjunctivitis, a serious eye disease, and some can produce cancer in certain laboratory animals.

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* Coxsackie is the name of the community in New York State where these viruses were first discovered.

** Echo is an acronym for enteric, cytopathic, human, orphan.

+ Picorna is an acronym for pico-small, rna-ribonucleic acid.

Reoviruses. The reoviruses*, comprising three serotypes, have been associated with respiratory and enteric diseases. One type has been reported to produce cancer in baby mice when the virus was inoculated in very small concentrations.

Infectious hepatitis virus. The virus of infectious hepatitis has yet to be grown in laboratory cultures, and remains something of an enigma to this day.

Most of these viruses produce asymptomatic infections most of the time. Only occasionally do they produce disease. Infection is so common, however, that the amount of disease produced is significant.

The Hazard of Viruses in Water

Small amounts of viruses entering rivers and streams with wastewater are a hazard to those downstream who use these waters. Even a few virus particles in 100 gallons of river water would constitute a hazard, for the amount of virus in the total volume of water entering the intakes of even a small city on any day would be considerable.

Because small amounts of ingested viruses are likely to produce infection but not disease, it is likely that small amounts of viruses could be present in water and go undetected. Individuals infected with small amounts of viruses may show no signs, but they may excrete large amounts of viruses. Thus, they may infect their contacts with large amounts, and produce in those contacts recognizable illnesses. Although such transmission of viruses has an essential water link, the spread of infection and disease in this fashion will appear to be by the personal contact route. The disease rates in secondary contacts might well be a much better indicator of source than the disease rates in water consumers themselves*. Such may also be true for bacterial infections and diseases, because the major concern in this area has also been with disease and not with infection.

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* Reo is an acronym for respiratory, enteric orphan.

Since a single PFU of virus is capable of producing infection in man, we must be able to detect that amount in relatively large volumes of water. We have set as a tentative goal detection of 1 PFU of virus per 100 gallons of water. Thus, we must develop this kind of detection capability.

Recovery of Viruses from Waters of All Qualities

The recovery of 1 PFU of virus from one-hundred gallons of water or more will require better concentration procedures than those available today. We must develop the capability for complete recovery of viruses from waters of qualities ranging from raw sewage to completely renovated.

Aluminum hydroxide adsorption and protamine sulfate precipitation. Because relatively large amounts of viruses are usually present in sewage and in effluents, only small volumes usually need to be tested. In these situations, technics are already available, but they cannot be readily adapted to large volumes. The $Al(OH)_3$ adsorption procedure (4,5) in which the virus is adsorbed on an $Al(OH)_3$ gel, may recover most enteroviruses in sewage effluents (4-6), but the method leaves most of the large adenoviruses and reoviruses behind. Reoviruses and adenoviruses may be recovered from effluents by precipitation with protamine sulfate but this technic leaves most of the small picornaviruses behind (7). The two methods may be used together to recover most of the viruses in all of these groups.

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* In controlled studies where controls consume sterile water (3).

Phase separation. The phase separation technic (8-10), has an overnight time requirement for completion. In phase separation sodium dextran sulfate and polyethylene glycol are mixed with a sample and allowed to separate. The viruses are then recovered from the lower bottom phase (dextran) and interphase by precipitation with KCl. The method may not be efficient with all viruses (11), but recent studies have been more encouraging (12).

The $Al(OH)_3$-protamine sulfate and the phase separation methods accommodate only limited volumes, and neither method is completely efficient. From test to test, both may suffer variations in efficiency. But, both technics are adequate for many purposes, and when only small volumes have to be tested, these technics may be useful. When large volumes must be tested, other methods must be sought.

For large volumes of water, the best approach would seem to be a filtration system.

The membrane filter technic. The membrane filter technic (13) consists of filtering water through 0.45 µ cellulose nitrate membrane filters. Viruses may adsorb to these filters and then be eluted from them. Adsorption of viruses requires the presence of salt (14,15), and is greatest at pH 7 (14). Complete recovery of enteroviruses, and 80%

recovery of reovirus 1 may be achieved in a 3% solution of a dehydrated beef extract (Colab) (14,16). Efficient recovery of enteroviruses may be achieved from 25 gallon quantities but with larger volumes, recoveries are now only 50 to 75% efficient.

Certain substances, probably organics, apparently coat the adsorptive sites on the membranes, and make them unavailable to the virus (13,15). Thus, the membrane filter technic may be useful for quantitative virus recovery from tap, renovated, and other clean waters, but even relatively clean waters may need to be pretreated to remove interfering substances before quantitative recovery of viruses can be achieved. It is still to be determined whether waters of poorer quality can be sufficiently purified without removing or destroying viruses so that such waters can be tested with the membrane filter technic. However, there are other filtration methods that offer promise for quantitative recovery of viruses from water. One such technic is the insoluble polyelectrolyte, in essence the ion exchange resin.

The polyelectrolyte technic. Viruses in water passed through a thin layer of the Monsanto polyelectrolyte PE 60 may adsorb to the polyelectrolyte and may be eluted with 10% fetal calf serum in borate saline at pH 9.0 (17). With this technic and other adjuncts developed during the field experience, viruses have been recovered from 50-gallon samples of river water taken long distances from outfalls along the fast-flowing Missouri River during the winter months. On two occasions we sampled water intakes and recovered viruses in concentrations of 19 and 3 PFU per 50 gallons, respectively. These concentrations are equivalent to 360,000 and 60,000 PFU per million gallons of water consumed.

In order to sample such large volumes of water, hundreds of gallons had to be trucked to Cincinnati at each sampling. This was a cumbersome expensive operation. Thus, as our field experience progressed, we tested procedures for filtering large volumes of water in the field and recovering viruses after transporting filters and adjunct samples to the laboratory. Comparative studies presented in Table 3 show that recoveries of viruses were as great from field-filtered samples as from samples trucked to the laboratory.

The polyelectrolyte technic is reasonably efficient with poliovirus 1, but not with any of the other viruses that have been tested. Poliovirus 1 recoveries often exceed 50%, but echovirus 7 recoveries are sometimes below 30%, and reovirus 1 recoveries are sometimes below 20% (Table 3 [14]). Despite its low and erratic efficiency, however, the technic seems to be the most sensitive now available for studies of large volumes of water. Adjunctive procedures developed in our laboratory have at least doubled this sensitivity.

Because many different ion exchange resins can be produced in the search for maximum virus recovery efficiency, these substances clearly warrant the renewed interest they now enjoy.

Osmotic ultrafiltration and electro-osmosis. Osmotic ultrafiltration, electro-osmosis and other methods are also under study, but their capability is not yet clear. It is not yet clear either, whether we will eventually attain a universal recovery system efficient with waters of all qualities, or whether we will need to tailor the recovery system to the water under study.

Removal of Viruses from Waste and Other Waters by Treatment Processes

Viruses can be removed from waters by biological, chemical and physical treatment procedures. Most procedures that remove chemical pollutants also remove viruses, but not always as well. Primary settling removes 40 to 70% of the viruses in 24 hours, and almost none in three hours (Table 4 [18]). In laboratory studies, activated sludge may remove more than 99% of viruses present (18), but less effective removal has been shown in the field (14). Coagulation with $Al_2(SO_4)_3$ may remove 90-97% of viruses added to settled effluent (Table 5 [19]), but carbon adsorption removes little of the virus added to trickling filter effluent (20). $Ca(OH)_2$ coagulation, however, may remove 99 to 99.9% of poliovirus 1 added to activated sludge effluent (16). $Al_2(SO_4)_3$ and $FeCl_3$ (21) remove more than 90% of viruses added to river water (Table 6), but effectiveness in the field has not yet been evaluated. Cationic polyelectrolytes may remove 99 to 99.9% of viruses added to water (Table 6 [19,22]).

Coagulation with lime may produce rapidly virucidal pH levels in soft waters (Figure 1 [16]).

It is not completely clear to what degree viruses are adsorbed to carbon and sand, and to what degree they are adsorbed to the microcosmic deposits on carbon and sand surfaces (14,20).

Thus, some treatment procedures remove large quantities of viruses from waters and some do not. Usually, laboratory data are more optimistic than field data are. The treatment plant coping with various organics, solids and the like is a much different situation than the well-controlled laboratory experiment.

In any event, all treatment procedures remove some viruses and thus constitute adjunctive removal. Furthermore, treatment procedures remove from water many substances that interfere with disinfection and thereby facilitate eventual total removal or destruction of viruses by terminal disinfection.

Disinfection

Terminal disinfection is requisite to the production of safe water. Under the limitations imposed by cost and the uses to which the waters are to be put, it is unlikely at this time that any one chemical or physical agent can disinfect waters of all qualities. It is necessary today to tailor disinfecting agents to the chemical qualities of the waters to be treated. Thus, the treatment procedure that produces the product water will determine, in large part, the disinfectant to be used.

Chlorine. Chlorine, almost completely accepted as the universal water disinfectant for many decades, suffers many shortcomings. However, when hypochlorous acid (HOCl) can be maintained in a water, disinfection is readily achieved. Hypochlorous acid is a rapid virucide. The rapidity with which it destroys poliovirus 1 is shown in Figure 2 (23).

Several years ago, in our laboratory, coxsackievirus A9 was added to an aliquot of an effluent that had undergone primary and secondary treatment, diatomaceous earth filtration, carbon adsorption, electrodialysis and chlorination to a level of less than 2.5 mg HOCl/liter. The virus could not be detected 1 minute later. At least 99.99% of the virus had been destroyed. This water was dechlorinated, and later consumed by personnel with no ill effect.

Ozone. In those situations where the causticity or toxicity of hypochlorous acid is troublesome, ozone (O_3) may be preferable. Ozone leaves no residual, decomposing rapidly into oxygen. Figure 3 shows that ozone also is a rapid virucide (24). Maintaining a drinking water supply with no residual disinfectant is ill-advised, and when ozone is used for drinking water, addition of a second disinfectant would be well directed.

Most effluents contain ammonia, sometimes in excess of 20 mg/l. Chlorinating such effluents generally produces only chloramines because eight milligrams of chlorine react with every milligram of ammonia nitrogen before the breakpoint is reached. Chloramines are slow disinfectants (Figure 4 [25-27]) and toxic to fish. Ozone does not react with ammonia, but it does react with other interfering substances.

Iodine. In water solution, elemental iodine (I_2) does not usually react with ammonia. I_2 is a slower virucide than hypochlorous acid is, but it is a faster virucide than chloramines ($NHCl_2$, NH_2Cl) are (Figure 4 [28,29]). Moreover, significant amounts of hypoiodous acid (HOI) occur in water at pH levels between 7.5 and 8.5. HOI is a much more rapid virucide than I_2 is (29). Iodate (IO_3^-), which form in significant quantities from the slow decomposition of HOI as pH levels increase beyond 8, are not virucidal. Iodine ion (I^-) and triiodide ion (I_3^-) are not virucidal either. Triiodide ion results from the reaction of elemental iodine and iodide ion.

Iodine also may be used to disinfect sewage treated by chemical-physical methods. Ferric sulfate-clarified, carbon-adsorbed sewage may retain little turbidity and total organic carbon, but its ammonia content is usually high. In the absence of reducing substances, such waters can be disinfected with elemental iodine (Figure 4). Sewage treated with alum and carbon also is likely to contain large amounts of ammonia, and could be disinfected with iodine. Extensive studies have indicated that iodine is not toxic to man in the concentrations necessary to disinfect water (30).

Sewage treated with lime has a high pH. Since high pH makes ammonia-stripping possible, such waters may be disinfected with HOCl.

To achieve disinfection, however, the pH of the flocced water must be reduced because HOCl ionizes to hypochlorite ion (OCl^-), mostly as the pH rises from 7 to 8, and this ion is a poor virucide.

Bromine. Bromine also is a good virucide, but its usefulness is still under study.

U.V. radiation. In some applications, physical methods may be useful for inactivating viruses. Even in the presence of some turbidity, color, organics and other substances ultra-violet radiation can be virucidal (31,32).

Gamma irradiation. Gamma irradiation is deeply penetrating, leaves no residual, and is a potent virucide. At the moment, however, it is not a practical method for water or sewage disinfection.

SUMMARY

A human can be infected by a single viable virus excreted by another human. Thus, a single viable virus in water is a hazardous pollutant, constituting a danger to health and well-being. Viruses have been detected at water intakes along the Missouri River, and undoubtedly are present at water intakes along all of our waterways. Methodology for quantitatively detecting small amounts of viruses in large volumes of water are inefficient and urgently demand an accelerated research effort.

Investigation of the problems of viruses in water is in its infancy. The major problems of what waterborne viruses are important to us, how they can be quantitatively detected and identified in waters of all qualities, how effectively treatment processes remove them, and how they can be destroyed in waters of all qualities are still unanswered. The resolution of all of these problems will mark the direction of research in this area for the next decade.

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TABLE 1

The Minimal Infective Doses for Man of Several Enteric and Respiratory Viruses*

Virus inoculated	Dose inoculated**	Inoculation route	No. infected / No. inoculated
Poliovirus 1	2 PFU	Oral (gelatin capsule)	2/3
Poliovirus 3	1 TCD_{50}	Gavage	3/10
Measles	1 TCD_{50}	Intranasal	8/35

* Plotkin, S. A. and Katz, M. (1967). In "Transmission of Viruses by the Water Route," edited by G. Berg, John Wiley and Sons, New York, New York, p. 151, abstracted and revised, and Katz, M. and Plotkin, S. A. (1967). J. Am. Pub. Health Assoc., 57:1837, abstracted and revised.

** Given either as plaque-forming units (PFU) or as the quantity of virus that infected 50% of the tissue cultures inoculated (TCD_{50}).

TABLE 2

Enteric Viruses and Closely Associated Illnesses

Virus*	Illness									
	Paralytic poliomyelitis	Aseptic meningitis	Pleurodynia	Herpangina	Respiratory illnesses	Ophthalmic infections	Enteritis	Rash diseases	Acute infantile myocarditis	Jaundice
Polioviruses	X	X	..	..	..	..	..	..	..	..
Coxsackieviruses group A	..	X	..	X	..	..	..	X	..	..
Coxsackieviruses group B	..	X	X	..	..	..	..	..	X	..
Echoviruses	..	X	..	..	X	..	X	X	..	..
Adenoviruses	..	..	..	..	X	X	..	..	..	..
Reoviruses	..	..	..	..	X	..	X	..	..	..
Infectious hepatitis virus(es)	..	..	..	..	..	..	..	..	..	X

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[*] Within each designated group, only certain strains have been proven responsible for the designated diseases.

TABLE 3

Recovery of Viruses from Freshly Prepared and Stored Polyelectrolyte PE 60

Virus	Control	Freshly prepared PE 60	Stored PE 60	Storage (days at 4 C) Before test	Storage (days at 4 C) After test
Poliovirus 1	75*	38* (51%)	45* (53%)	2	3
Echovirus 7	79	24 (30%)	20 (25%)	2	5
Reovirus 1	105	33 (31%)	9 (8%)	2	5
Reovirus 1	84	14 (17%)	12 (14%)	2	2.5

* Plaque-forming units.

TABLE 4

Removal of Viruses from Wastewater Effluents by Biological Treatment Procedures

Method of treatment	Material tested	Time retained (hours)	Virus added	Virus removed (%)	Reference
Primary settling	Primary effluent	3	Poliovirus 1	0-3	18
Activated sludge	Activated sludge effluent	6.0-8.4	Coxsackievirus A9	96-99	18
		6.0-7.5	Poliovirus 1	88-94	18
		2.75	None*	53	14
		2.75	None*	71	14

* Difference of virus concentrations in primary and secondary effluents.

TABLE 5

Removal of Viruses from Wastewater Effluents by Physical and Chemical Treatment Procedures

Method of treatment	Material tested	Virus added	Virus removed (%)	Reference
$Al_2(SO_4)_3$ (50 mg/1)	Settled effluent	Coliphage T4 Phage MS2	96-97 90-94	19 19
Carbon adsorption (0.5 gal/min/sq ft)	Trickling filter effluent	Coliphage T_2	35	20
$Ca(OH)_2$ coagulation (500 mg/1)	Activated sludge effluent	Poliovirus 1	98.5-99.9	16

TABLE 6

Removal of Viruses from Water by Chemical Treatment Procedures

Method of treatment	Material tested	Virus added	Virus removed (%)	Reference
$Al_2(SO_4)_3$ coagulation (25 mg/l)	River water	Coxsackievirus A2	95-99*	21
$FeCl_3$ coagulation (25 mg/l)	River water	Coxsackievirus A2	92-94*	21
Cationic polyelectrolytes**	Deionized water	Coliphage T4	99.9	19
		Phage MS2	99-99.6	19

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* With good floc formation.

** Primafloc C-7 (Rohm and Haas Company), and Catafloc (Calgon Corp.). (Most effective concentrations ranged from about 7.5 to 20 mg/l)

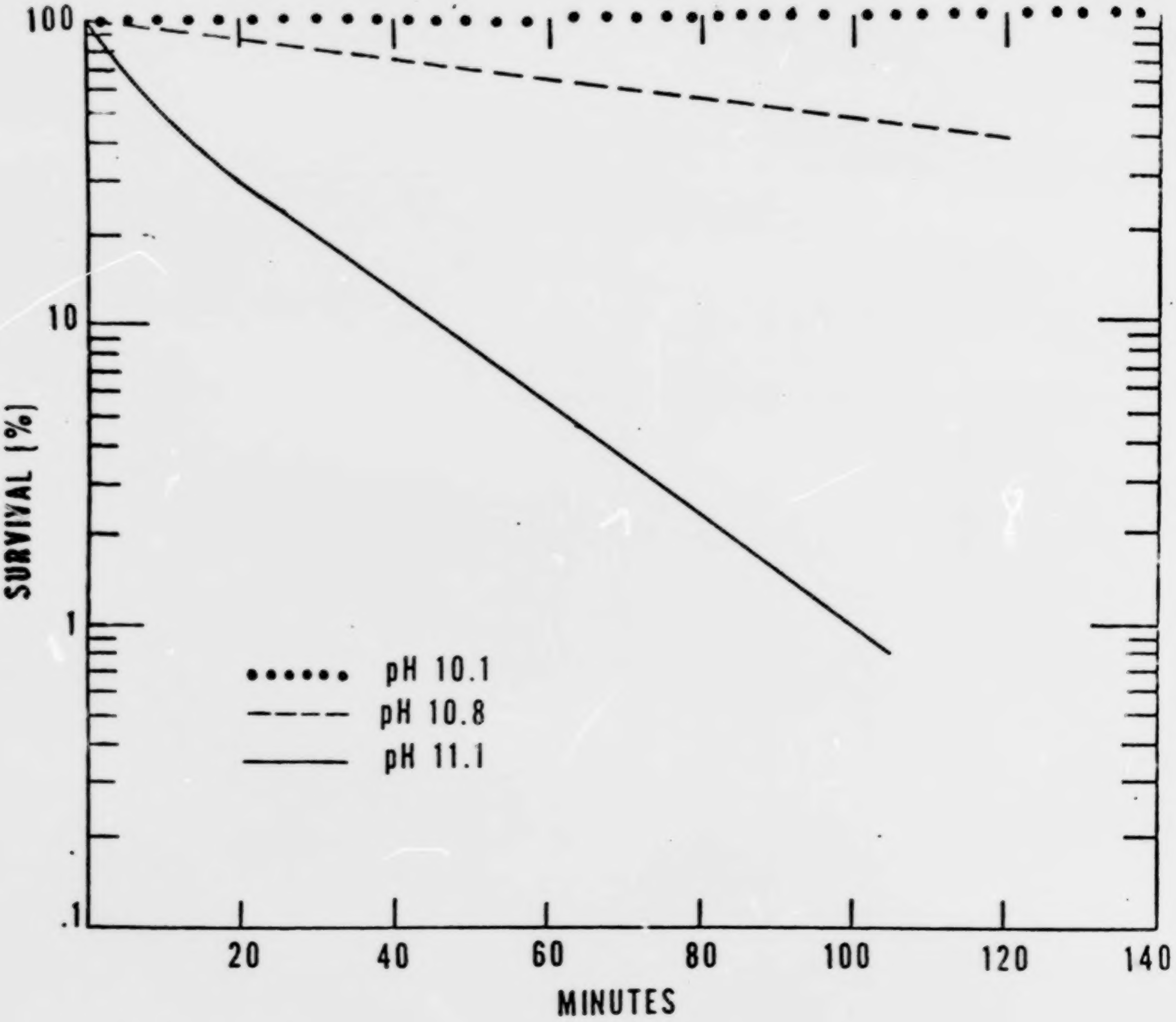


Figure 1. Inactivation of poliovirus 1 by high pH in lime-flocced, rapid sand-filtered effluent at 25 C. The $Ca(OH)_2$ concentration was 500 mg/l. HCl was used to adjust pH levels downward (16).

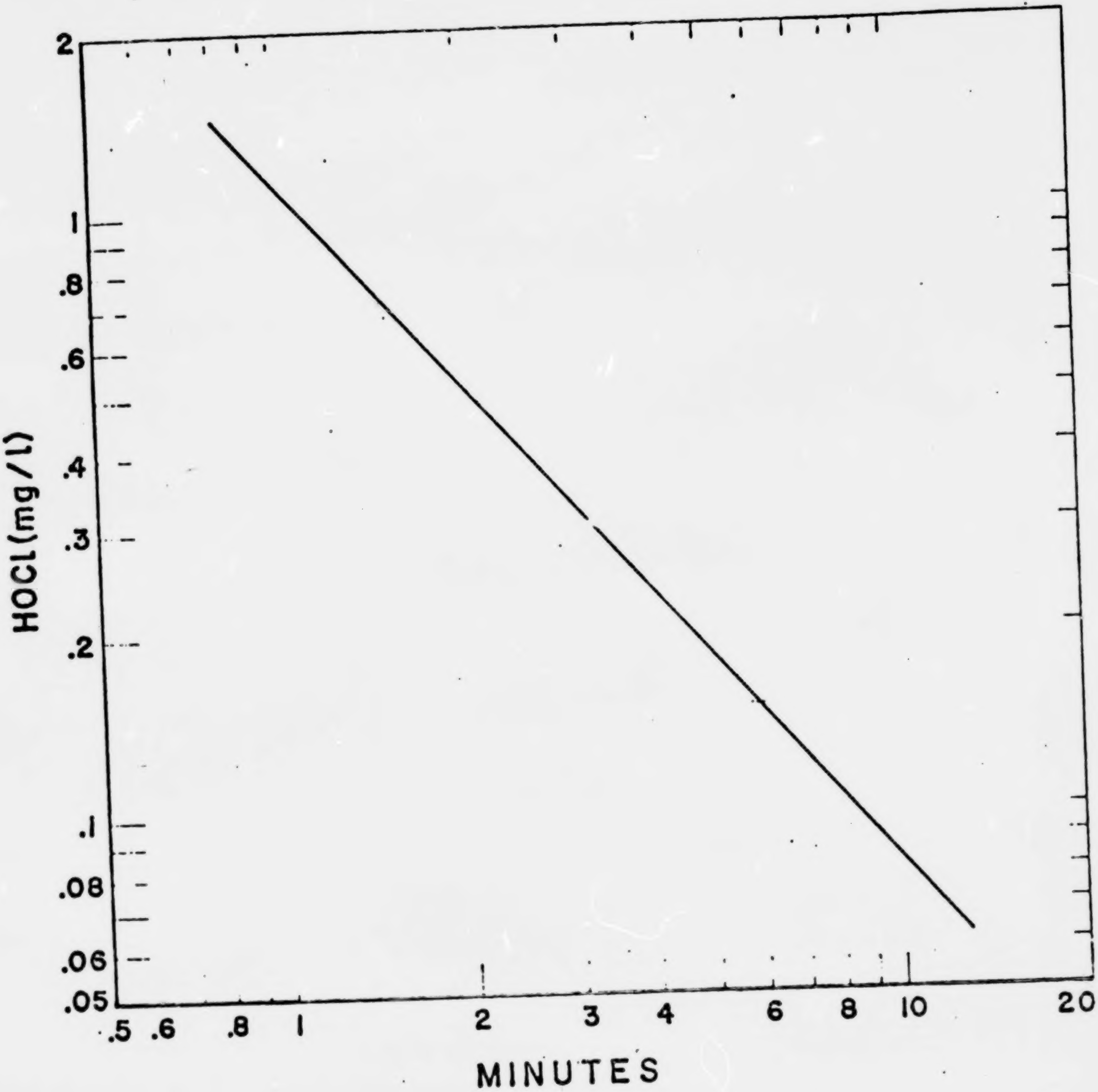


Figure 2. Relationship between time and HOCl concentration for 99% inactivation of poliovirus 1 at 0 C (23).

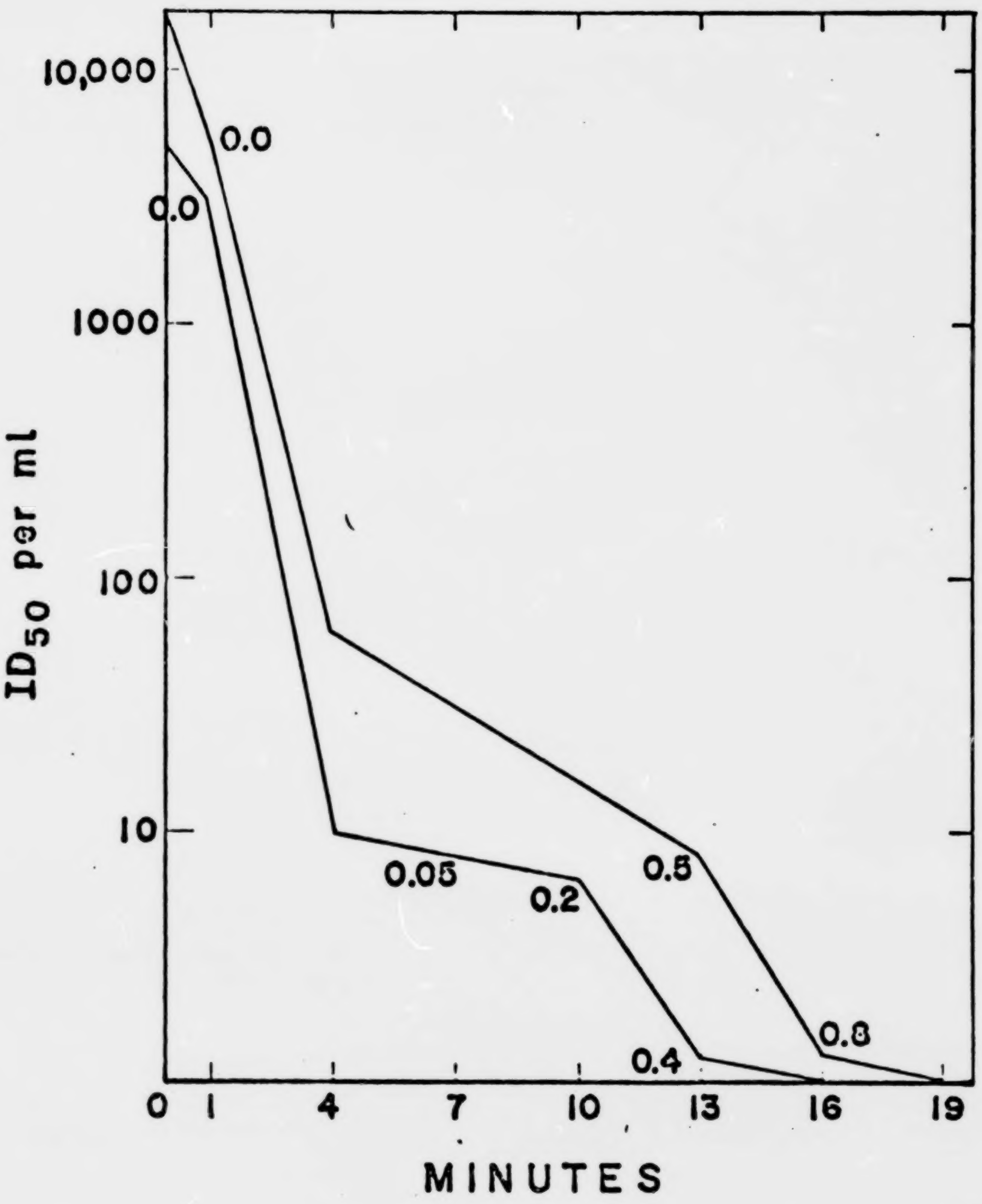
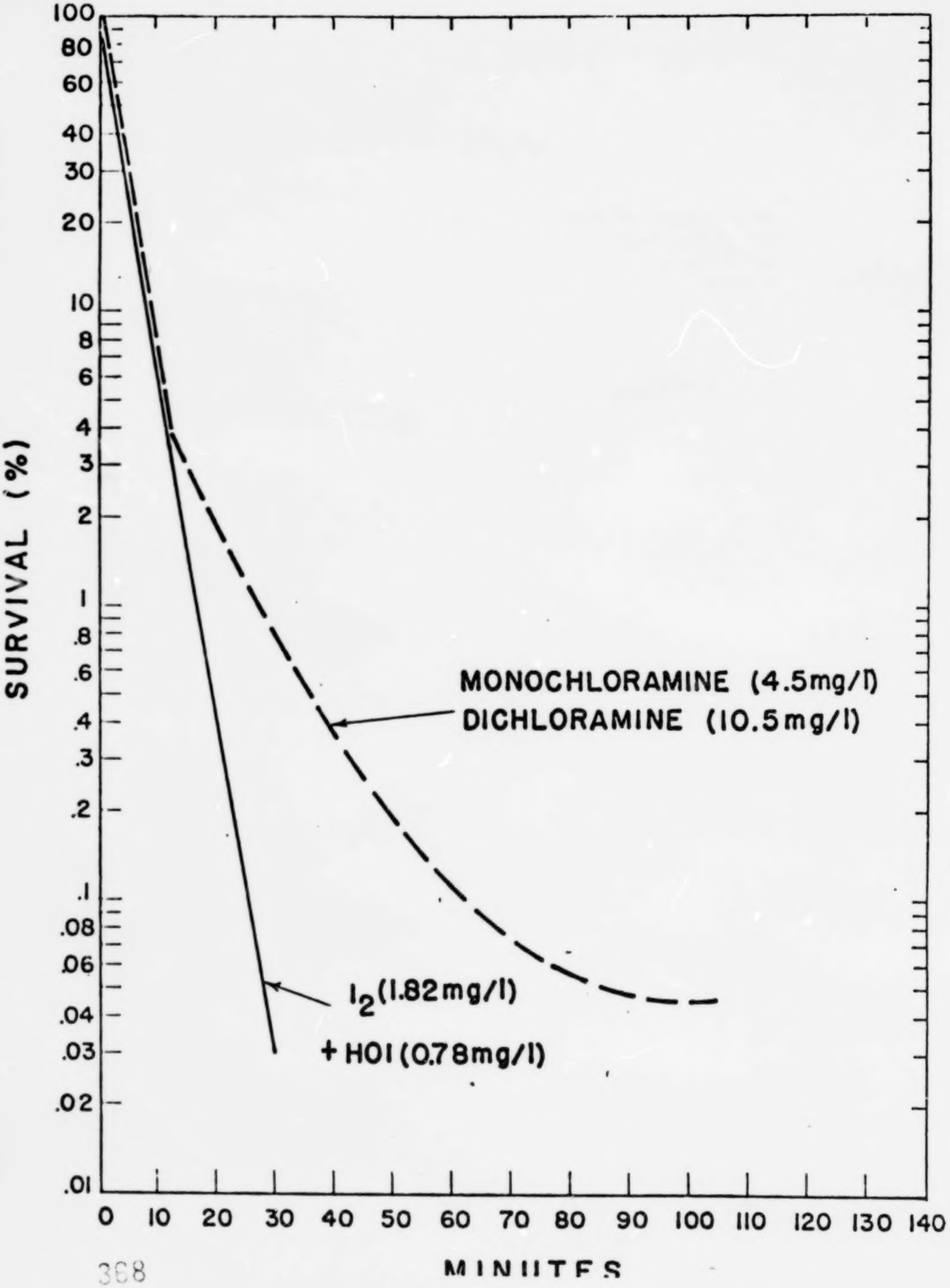


Figure 3. Inactivation of poliovirus 1 by O_3 added intermittently to seeded river water (24). O_3 concentrations (mg/l) are shown at sampling points.

Figure 4. Inactivation of poliovirus 1 by a mixture of monochloramine and dichloramine, and by a mixture of I_2 and HOI (27). All concentrations are expressed in terms of titrable halogen present.


100
80
60
40
30
20
10
8
6
4
3
2
1
.8
.6
.4
.3
.2
.1
.08
.06
.04
.03
.02
.01
SURVIVAL (%)
MONOCHLORAMINE (4.5mg/l)
DICHLORAMINE (10.5mg/l)
I_2(1.82mg/l)
+ HOI (0.78mg/l)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
MINUTES

The Possibility of Human Health Hazards Associated with Expansion of the Clavey Road Sewage Treatment Facility; A Microbiological Viewpoint.

Martin H. Rogoff, Ph.D.

January 13, 1971

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I. STATEMENT OF POSITION

From a microbiological viewpoint neither the relative efficiency of a sewage treatment plant in lowering Biochemical Oxygen Demand (BOD) of influent waste, nor the precise methodology of treatment is at issue. Microbiologically, municipal waste, by its very nature, contains a high population of potentially pathogenic microorganisms. The physical nature of the proposed treatment facility, indeed, the nature of the sewage treatment process itself is such that a definitive possibility exists for transfer to human hosts of pathogenic microorganisms derived from the sewage under treatment. Residents in the immediate environs of sewage treatment facilities would, of course, receive maximum exposure.

The microbiological position that must be taken is based on two considerations; these are: 1) no definitive evidence has been forwarded to demonstrate the absolute safety of operation of a sewage treatment plant in close proximity to a high population density, and 2) factors indicative of potential health hazards can be documented. The possibility of health hazard is concluded to exist. This should preclude actions contributory to the health hazard including continued operation of the current facility under conditions of demonstrated environmental pollution or expansion of the plant's capacity with an attendent quantitative increase in possible deleterious effects.

The intimation on the part of the NSSD of the absolute certainty of the safety of operation of both the current facility and an expanded plant is unrealistic and a tenuous position to maintain in the light of current knowledge. To date no experimental evidence to demonstrate lack of hazard has been presented or obtained by NSSD. Sufficient evidence for hazard exists to warrant the burden of proof of safety to be placed on the currently demonstrated and potentially massive polluter, NSSD. The following presentation will attempt documentation of certain aspects of the potential hazards to health and environment associated with operation of a sewage treatment plant closely contiguous to a large human population.

II. THE NATURE OF SEWAGE TREATMENT AS RELATED TO BIOLOGICAL QUALITY OF THE TREATMENT STREAM

In order to support a position which will not accept operational data from sewage treatment plants as dogma, some understanding of the nature of the treatment process is required. First of all, sewage treatment is a dynamic process. Influent waste is of a constantly changing composition and the microbial population dissimilating the waste responds to the changing nature of the substrates. The entire system is then in a constant state of flux. Indeed, it must be so or the efficiency of treatment would be too low to be of value. In short, a sewage treatment system is a true "in stream" process, dynamic as opposed to static in nature, responsive to changes in the nature of the influent, and in practice a complete malleable ecosystem.

Operators of sewage treatment plants view the process as "on stream" and attempt to reduce the biological processes to measurements of chemical parameters, e.g. dissolved solids, suspended solids, Biochemical Oxygen Demand (BOD). The latter, BOD, is considered to be a parameter used to measure the amount of oxidizable substrate available to the oxidizing microflora and the pollutional potential of the effluent. During the course of presentation of technical information there has been a tendency to treat BOD as a substance; this it is not. It can be reduced but not removed and the terms "nonremovable" or "non-oxidizable" BOD indicate a lack of understanding of the nature of BOD. BOD measurements on effluent streams in a treatment plant cannot be related to epidemiological hazards, because the measurement itself gives no clue as to what an increase or decrease in effluent BOD actually indicates biologically. It is often assumed to measure biologically degradable substances in the influent which passed through treatment unaffected. Actually it measures oxygen consumption due to other phenomena. In this regard note the following:

1. Efficiency of the process depends as much on settling characteristics of the sludge as upon removal of the noxious components by biological oxidation. Therefore, low effluent BOD can reflect high levels of noxious components unaffected during treatment other than by flocculation which remain in the sludge (effluent) lagoons.

2. Metabolic activity (oxygen consumption) of a pathogen cannot be distinguished from that of a normal sewage saprophyte.

3. Spores may not contribute to BOD.

4. Viruses may not contribute to BOD.

5. Only metabolic activity, not numbers of viable micro-organisms are measured.

6. Predator activity probably does not distinguish between pathogenic and non-pathogenic prey organisms. There is not necessarily a preferential destruction of pathogens. Viruses do not enter "metabolic competition".

7. Increases in BOD might indicate decreases in primary, secondary, tertiary saprophytic activity, increased predator activity, decrease in flocculation by the sludge organisms or a population shift to organisms having poor settling characteristics. The number obtained as effluent BOD cannot tell us which. In short, BOD has no predictive or insight value into the biological aspects of the sewage treatment process.

Thus, the BOD criterion cannot be used as descriptive of the biological quality of an influent, in-process, or effluent stream particularly when epidemiological considerations are in question.

III. THE NATURE OF THE POTENTIAL HEALTH HAZARD

A. Presence and persistence of infectious agents

Infectious agents including bacteria, fungi, viruses, protozoa and certain higher forms, e.g. eggs of *Ascaris* may be universally found in municipal wastes. Certain industrial wastes such as fermentation liquors, food processing wastes, oily wastes may also present a high microbial burden to an influent. Microbial agents of disease can and do persist through biological waste treatment processes. In fact, there are reported cases of viruses absent from influent municipal waste streams which have been detected in the effluents following treatment. Two general reviews on the subject are suggested here.[1,2]

Among the members of the infectious microbial population of sewage with which we are most concerned would be the enteric bacteria, both aerobic and anaerobic, the enteric viruses and other viruses such as the causative agent of hepatitis. I would like to point out in regard to these forms that current methods used in microbiological evaluation of sewage treatment cling to identification of coliform bacteria as indicators of fecal flora persistence. Future concern may not lie with this group of organisms. The recent work of W. C. Moore at Virginia Polytechnic Institute has demonstrated conclusively that coliform bacteria are a minor component of the human intestinal microflora. The bulk of the bacteria present in the gut are obligate anaerobes including various pathogenic and "opportunistically pathogenic" species. The presence of these anaerobes is not disclosed by coliform counts, and may not even be revealed by some common techniques for culture

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[1] Kollins (1966) Advances in Applied Microbiology 8,145.

[2] Pipes (1966) Ibid., 77.

of anaerobes due to their extremely fastidious nature in regard to free oxygen. Thus, the major microbial elements of fecal microflora are not being considered in determinations of the microbiological quality of sewage influents and effluents, or for that matter in estimation of water supply potability.

It should further be noted that microbial load in a treatment plant influent, including pathogenic forms, is not a constant. It will vary with climatic conditions, seasonal variations, general health of the community, effects of admixture with industrial waste and holding time in transport. In other words, the dynamic quality of the influent referred to in section II holds for the pathogenic load. Even without precise data, the seasonal appearance of water-borne epidemics of "intestinal virus disorders" and similar diseases attest to the dynamic aspects of effluents. The persistence of the causative agents can be related to the potential health hazard in a quantitative way. A plant operating at 90% efficiency will release infective agents in the effluent in direct proportion to their presence in the influent, all other factors being equal. The actual pathogen load then would be a function of original numbers, plant efficiency and amount of waste treated. This is a most important point in the context of this particular problem.

B. Relation of diseases to waste disposal

1. Related diseases: the relationships between disease and solid waste has been well documented in a bibliography prepared for the U.S. Department of Health, Education and Welfare in 1967 by Haaks.[a] The listings are reasonably complete and among human diseases associated with human fecal waste he mentions cholera, shigellosis, tuberculosis, typhoid and paratyphoid fevers, amoebic dysentery and other protozoan infections, coccidiosis, infectious hepatitis, poliomyelitis and helminthic infestations. References are also given to diseases deriving from animal fecal wastes, e.g. anthrax and miscellaneous fungal diseases. Enteric viruses should certainly be added to this list.

2. Biological vectors: the role of vectors in transmission of waste-associated pathogen to human hosts is also documented with particular emphasis on flies, mosquitoes and rodents as vectors.

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[a] Haaks (1967) Solid Waste/Disease Relationships USDHEW, Cincinnati

3. Physical vectors: Haak also provides additional reference to physical vectors, e.g. airborne solids, direct contact and contamination of food and water supplies. The associations treated in this literature survey leave little doubt as to the existence of epidemiological hazards related to sewage handling.

Let us consider airborne solids further. The literature relating to the survival of bacteria and viruses in aerosols is vast. Much of the literature on the subject has been compiled by the federal scientists at the U.S. Army Chemical Corps Center at Ft. Detrick, Frederick, Md. This literature, much of which is restricted, is particularly important since the microorganisms studied were almost universally those associated with human disease. The survival of bacteria and viruses in aerosols is a subject of continuing concern and study. Documentation can most simply be initiated by backtracking from Ehrlich, et al.[4] This reference is quoted not for the survival data of the Flavobacterium, a common soil and water organism, which it contains, but simply to demonstrate that the aerosol survival problem is well recognized and is the subject of continued and on-going research. A rather complete bibliography on the subject of airborne pathogens was developed in association with study of the airborne infection hazard associated with manned space flight. These references appear in the bibliography of the National Academy of Sciences' publication "Infectious Disease in Manned Space Flight"[5] and is available from the Washington office of that agency.[5] It is also possible to document that fecal organisms represent a potential hazard in their ability to survive in an abnormal environment, e.g. that of respiratory tract. The transfer of fecal organisms to the respiratory tract of humans as a result of malfunction of a sewage disposal system, in this case in a submarine, can be documented by the work of Watkins, et al,[6] who reported their studies to the American Medical Association in 1964.

Lastly, it should be pointed out that aerosolization and air-transmission are not the sole means of transmission of pathogens.' The aforementioned vectors play a role as does seepage of sewage through soil to ground water, hence drinking water supplies. Entry of effluent to water supplies also presents a possible hazard. Are these modes of transmission inherent to the operation of a sewage treatment plant? The answer must be, YES!

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[4] Ehrlich, Miller and Walker (1970) Applied Microbiol., 20,884.

[5] See Ref's page 131 No's 90-112 in Bibliography of Appendix A, p 102 in Infectious Disease in Manned Space Flight, National Academy of Sciences, Washington, D. C., 1970.

[6] Watkins, et al, Abstracts AMA National Meeting, June 22,1964.

An activated sludge process is an aerobic process and requires the entrainment of air into the sewage being treated. Recycling, pumping, water turbulence are necessary components of an activated sludge process. Such processing then results in aerosol formation. One need only observe a large plant in operation, such as that in Stickney or Milwaukee, in which the aerosolization effects are visible to the naked eye. Note that there is no case presented demonstrating microbial pathogen loads or lack thereof in air surrounding sewage treatment plants. Such monitoring is *not* routine.

As for entry of pathogens into ground waters, this is entirely possible in any situation where retention basins or effluent lagoons are not structural elements but are excavated from bare earth. Loss of water from the effluent lagoon comes about as a function of evaporation and seepage of water through the underlying soil. In the case of the Clavey Road plant, in an area where the water table is quite close to the surface, chances for contamination of ground water from bare earth lagooning should be extremely high.

C. Secondary factors bearing an epidemiology of waste-associated disease

1. *The immune response to virus infection*: it was suggested by Dr. Dinehart, a witness for the League of Women Voters at hearings of the Illinois Pollution Control Board, that perhaps exposure of the local population to viruses might be beneficial. They would develop immunity to a variety of viruses. The opinion was echoed by Dr. Slade, Microbiology Consultant to the City of Highland Park. I sincerely hope their testimony was not offered in all seriousness.

Let me respond quickly to the foregoing, first as to the quantitative nature of the infectious process. Reactions involving the immune response *are* diseases and the numbers game is being played as to which takes command, the infecting agent or the host's immunologic mechanisms. It is chancy enough, viz. influenza or rabies vaccines, to attempt immunization under controlled dosages. The idea of random exposure to unknown quantities of virus is unthinkable as a desirable feature of a sewage treatment stream in your own back yard.

Further, the individual who forwarded this idea is apparently not aware of recent literature pertinent to the effects of virus infection on immune response. I suggest reading of Notkins, et al[7], who indicate the differential immune response effects of viral infections. These authors point out first that viruses can influence many parameters of immune function including antibody production, immunoglobin levels, induction of immunological tolerance, delayed skin reaction, lymphocyte transformation and phagocytosis. Most important are studies which have demonstrated that cellular and humoral immunity can be independently affected. Thus a virus (LDV) which depressed cellular immunity augmented humoral immunity. Another (VEF) did not affect cellular immunity but augmented humoral. Another, Gross leukemia virus, depressed both. This has important implications pertinent to continuous (or discontinuous) exposure to low levels of virus. Depression of humoral immunity could make the host more susceptible to other infectious agents. Depression of cellular immunity would lower capability to reject malignant cells and could potentiate tumour initiation and growth. Cellular immunity depression could also make the host less able to reject virus infected cells opening a path toward establishment of chronic virus infections.

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[7] Notkins, Mergenhagen and Howard (1970) Ann. Rev. Microb.24,525.

The desirability of creating an environment designed to expose us to low levels of viruses seems at the very least questionable.

2. Effect of waste-derived chemical pollutants on host susceptibility: it should be noted that chemical pollutants associated with the treatment of sewage such as NO_2, SO_2, and as had originally been proposed for use in the Clavey Road facility, ozone, have the effect of increasing human susceptibility to infection by the agents of numerous diseases. The effects of these pollutants on infectivity of pathogens are again well documented in the National Academy of Sciences' report "Infectious Disease in Manner Space Flight".[8]

3. Nitrous acid as a mutagen: it should also be noted that NO_2 which in aqueous solution forms nitrous acid, is a known mutagen. Mutagenicity of nitrous acid is documented in the references below,[9,10,11,12] and in matter of fact, nitrous acid is used routinely as a mutagenic agent in procedures for mutation of microorganisms. This represents an additional hazard since mutation of an avirulent microorganism to a virulent form is highly probable, particularly in view of the large numbers of microorganisms of a potentially pathogenic nature present in sewage.

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[8] See ref's page 131 No's 113-143 in Bibliography of Appendix A, page 102 in Infectious Disease in Manner Space Flight, National Academy of Sciences, Washington, D. C. 1970.

[9] Tessman, Poddar & Kumav (1964) J. Mol. Biol. 9,352.

[10] Kaudewitz (1963) Biochem. Biophys. Res. Comm. 11, 416.

[11] Vielmetter & Schuster (1960) Z. Naturf. 156,304.

[12] Lavalle (1960) C. R. Acad. Sc. Paris 250,1134.

4. Transferrable drug resistance in enteric bacteria:

Another factor which should be mentioned is that the enteric bacteria possess the quality of being able to exchange drug resistance properties between members of a viable population[13,14]. The genetic factors responsible for resistance to certain drugs in these bacteria are extrachromosomal in nature and are termed episomes. The phenomenon is termed episomal transfer of drug resistance. The chances for transfer of drug resistance characteristics to non-drug resistant members of the enteric microflora in a high population density of enteric bacteria such as is encountered during sewage treatment would be excellent. Replacement of non-antibiotic resistant microflora by antibiotic resistant strains in humans exposed to this transformed population would be a secondary hazard of potentially high danger. This danger is particularly insidious since it would not be observed until antibiotic therapy was required.

IV. THE QUANTITATIVE EFFECT, A SUMMARY STATEMENT

The preceding statement is not intended to be interpreted as a dire prediction of total deterioration of our local environment in terms of health and habitability should an improved sewage treatment facility continue to operate at Clavey Road. It is intended to point out that such a facility does present certain hazards to health. They are biological and chemical in nature. They are inherent to the sewage treatment process and the nature of the material being processed. There is an ever-present danger that due to malfunction of any nature, an episode of disaster proportions can occur.

The level of possible deleterious effects is quantitatively related to the amount of sewage treated. This should be self evident. Any increase in the capacity of the Clavey Road plant will proportionally increase the hazard potential.

It would seem then that the utmost consideration should be given to halting further expansion of the facility. If it is agreed that the possibility of a health hazard exists, that total lack of health hazard is not currently demonstrable and that sewage treatment by its very nature cannot benefit a residential area, but potentially can threaten it, then the only conclusion to be reached is to remove the facility, or at least not expand it in the environs of a high concentration of humans.

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[13] Anderson (1968) Ann. Rev. Microbiology 22,131.

[14] Smith & Linggood (1970) J. Gen. Microbiol., 62,287.

The argument that epidemiological relationships have not been proven is not valid. The work has simply not yet been done. Let us count ourselves fortunate that our U.S. Public Health Service did not wait for definitive proof before taking measures to protect our population. They brought sanitation, quarantine and preventive measures to bear, in some instances, before germs were related to disease at all.

Hopefully the Environmental Protection Agency will take the same "reasonable doubt" attitude and agree that potentially, sewage treatment in the immediate vicinity of human habitation is a tenuous situation. When recognized as such, expediency will not be allowed to overcome the public welfare.

MH Rogoff

Martin H. Rogoff, Ph.D.
1563 Robin Hood Place
Highland Park, Illinois 60035

UNIVERSITY OF ILLINOIS AT THE MEDICAL CENTER, CHICAGO

January 18, 1971

Mr. Martin Warner

Dear Sir:

At your request I am responding to the question set forth by Mr. Gary Schenzel of the Water Resources Planning Branch of the U.S. Department of the Interior. Question I is, "What is the probable impact of the project on the environment?" It is contemplated that the present 4 million gallons per day treatment plant be enlarged to an 18 million gallons per day treatment plant.

a. Odors

Even at the present level of treatment a significant area in the surrounding community is subjected to unpleasant odors from the hydrogen sulfide mercaptans and other gases produced by the sewage plant. This is particularly true during the summer months when many individuals are outdoors, sit in their yards, work in their gardens, prepare food outside, etc. If one defines health, not merely as the absence of disease but as a state of physical and mental well being where individuals can function and enjoy the fruits of their labors, (the definition of health of the World Health Organization) one can see that there is already an impact on the health of the community. In addition to their being unpleasant odors, many cause increased irritability of individuals. Some individuals who are odor sensitive can suffer significant effects on health in that they tend to have reduced appetites and gastrointestinal distress. In addition, intrinsic asthmatics who are environmental hyperreactors and do react to odors and have an accentuated negative response to them in regard to health. The increase to an 18 million gallons per day plant cannot help but increase proportionately the odors emanating from the plant. This will not only intensify odors for those already being exposed, but will increase the area of exposure to include more citizens. It should be further noted that a significant number of schools are within a half to one mile of the plant and in the direction from which the wind blows. a majority of the time (that is they are east of the plant). This cannot help but interfer with student concentration and ability to learn.

b. Physical health effects.

The physical health effects relate primarily to the lung but also may have an effect on the heart and other organs. The lung is the body's filter and as the two types of materials which are of great concern in regard to the health question. The first relates to the problem of gases produced. Gases produced from a sewage plant include the nitrogen compounds, particularly nitrogen dioxide, hydrogen sulfide and sulfur dioxide, carbon monoxide, carbon dioxide, mercaptans and others. Studies carried out by our group at the University of Illinois School of Medicine in the section of Environmental Health in the Department of Preventive Medicine have revealed that in the presence of air pollutants as measured by sulfur dioxide, individuals with chronic bronchitis have twice as many days of illness when the pollution levels are greater than 0.2 ppm than they do when the pollution levels are 0.04 ppm. The levels of SO_2 expected from this plant will reach a maximum of 0.23 ppm. In considering the levels of gaseous pollutants to which individuals will be subjected, one must consider not only what comes from the plant but also what is in the community. While very few measurements have been made, the levels of SO_2 in the ambient air from other sources already is close to or exceeding those standards which have been set by the State. Addition of the gaseous material from the plant will at times cause levels far exceeding those considered safe by the federal government as set down by the Air Quality Criteria for Sulfur Dioxide (Air Quality Criteria for Sulfur Oxides, Dept. of Health, Education and Welfare AP-50).

In addition to the gases, particulate will emanate from the plant as a result of burning. Many of these gases will become adsorbed by the particulate which also can travel longer distances eventually releasing the gases after they are inhaled into the lungs of individuals. The effects of these gases are as lung irritants. They cause interference with and ultimately destruction of the protective mechanisms of the lungs, including the mucociliary apparatus which is a system for clearing irritant and infected particles out of the lungs. In addition, they cause inflammation and swelling and therefore narrowing of the air passages of the lung and in individuals who are sensitive, spasm of these air passages with further narrowing which is the body's way of resisting the intrusion of irritant substances. In addition, recurrent irritation from these gases results in the development of very thick mucous in the air passages which cause plugging or blocking of smaller air passages, also reducing the ability to move air into and out of the lungs.

Behind these plugs infections frequently develop. It is logical thus to assume that these materials will not only cause infection but reduce the ability of the body to fight off infection. This was clearly shown in the Chicago Air Pollution Study carried out and published in the Archives of Environmental Health. (The Chicago Air Pollution Study: SO_2 Levels and Acute Illness in Patients with Chronic Bronchopulmonary Disease -B. W. Carnow, M. H. Lepper, R. B. Shekelle and J. Stamler: Vol. 18, 768 1969) .Other studies suggesting potential serious effects on sensitive individuals have also been published by us including Air Pollution and Physician Responsibility by B. W. Carnow published in the Archives of Internal Medicine, Vol. 127, Jan. 1971, pg 91 -95. These reveal that asthmatics particularly can have unusually severe effects from elevated levels of pollutants similar to those produced at the sewage plant.

Another serious problem has not been well documented in relation to sewage plants relates to bacterial and viral contamination. This will be increased with the increase in the size of the plant. Not only as noted above are the conditions present for decreasing the ability of the human body to fight off disease, but there will be a marked increase in the amount of bacteria and viruses present in the air of such a community coming from the plant. The processing of sewage includes continuous bubbling. This presents two potentially serious problems. First (Science Vol. 170, Nov. 6, 1970, page 626 in an article by Blanchard and Sydek) it is pointed out that " air bubbles breaking at the air-water interface can remove bacteria that concentrate in the surface microlayer and eject the bacteria into the atmosphere." The bacterial concentrations in the drops ejected from the bubbles may, depending on drop size, be from 10 to 10,000 times that of the water in which the bubbles burst." It should also be noted that many bacteria and viruses concentrate at the surface of the water because of the surface tension. The concentration of bacteria at the surface has been reported by Higgins, F.B., Thesis, Georgia Institute of Technology, 1964 and by Parker and Barsom in Bioscience, Vol. 20, page 87, 1970. That this is not academic has been shown by Morrow in Nature, Vol. 222, 1969, page 489 and Smith and Hugh Jones, Vol. 223, Nature, page 12, 1969, where a report of such aerosols carrying hoof and mouth disease long distances are noted. Spendlove in Science, Nov. 16, 1970, found that E. coli which is a good measure of sewage bacterial contamination and which is always accompanied by other bacteria when it is found, may be found at relatively high concentrations, up to 0.8 of a mile from the plant.

Studies have shown that bacterial aerosols can affect individuals in the surrounding areas as in a case of a small epidemic of ornithosis in Portland in 1956. Spendlove, Clifton J., Public Health Reports, Vol. 72, #2, Feb. 1975. It should again be remembered that the direction of the prevailing winds from the sewage plant is toward the lake and an area where a large public school is located within a half-mile of the plant. Other schools are also present at somewhat greater distances.

In conclusion then, in regard to the projected increase in the size of the sewage plant and its impact on the community, there will be present an increase in materials which will reduce the resistance of the lungs to disease and cause considerable irritation to the respiratory tract of many people in the surrounding community. Those more sensitive individuals such as asthmatics can be expected to show an increase in the number of attacks suffered. Further, in addition, there may be increased levels of bacteria and viruses which when added to the lowered resistance because of irritants can only have a greater deleterous effect, as noted the general level of the enjoyment of life in the community will be diminished by the increased odors coming from this plant.

2. In regard to probably adverse environmental effects which cannot be avoided, it is my understanding from reading various testimonies and reports that some of these can be avoided such as some of the gases, concentrations of gases, etc. I do not know what can be done in regard to the concentration of viruses and bacteria which I expect will become airborne as a result of the sewage treatment process.

It is my considered opinion that before such an increase in size of this plant is considered a study consisting of an analysis of airborne aerosols and particles, the extent of spread of disease producing aeorsol particles, the levels of pollution and ambient air quality and the additional impact of the air pollutants coming from the sewage plant on these levels all be carried out in a comprehensive study. This study should also include an epidemiologic study of the impact on the community, particularly in relation to respiratory disease. It is only at that time that question 2 can be answered. Obviously only when the problems are assessed can the possible ways of solving these problems and the available technology for solving these problems be ascertained. Until that time I don't think that one can deal with the question of whether or not adverse environmental effects can or cannot be avoided, specifically because we do not know what the effects are at this time. They have not been adequately studied here or in any other place in the country that I know of.

I trust this will be helpful to you in evaluating and considering this important matter.

Sincerely,

Bertram W. Carnow, M.D.
Associate Professor
Department of Preventive Medicine and Community Health
Chief, Section of Environmental Health
University of Illinois

STATE OF ILLINOIS)
) SS:
COUNTY OF LAKE)

IN THE CIRCUIT COURT FOR THE NINETEENTH
JUDICIAL CIRCUIT, LAKE COUNTY, ILLINOIS

JOSEPH LICATA, et al., Plaintiffs, Vs. NORTH SHORE SANITARY DISTRICT, et al., Defendants.	No. 70 MR 31

EXCERPTS OF REPORT OF PROCEEDINGS had at the hearing of the above entitled cause, before the Honorable Clarence E. Partee, Judge of said Court, on the 28th day of September, A.D., 1970.

APPEARANCES:

MR. JACK SIEGEL,
appeared for the plaintiff;

MR. MURRAY R. CONZELMAN,
appeared for the Defendant,
North Shore Sanitary District;

MR. THOMAS H. COMPERE,
appeared for the defendant, City
of Highland Park, a municipal
corporation of Illinois.

* * *

BERTRAM W. CARNOW,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SIEGEL:

Q Would you state your name, address and occupation, please.

A My name is Bertram Carnow. I live at 860 Oak Drive in Glencoe, a physician.

Q Dr. Carnow, would you tell us what your educational background has been?

A Well, I have a Bachelors Degree and a Bachelor of Medicine and a Doctor of Medicine, Chicago Medical School. I interned at Cook County Hospital in Chicago. I had a residency, specialty training in internal medicine at Michael Reese Hospital, and special training in cardiology and pulmonary at Michael Reese Hospital.

Q Are you presently associated with any institutions?

A Yes, I am. I am chief of the section of environmental health in the College of Medicine. Associate Professor of Preventative Medicine, Medical Director of the Tuberculosis Institute in Cook County. I'm a chest consultant and attending physician at Michael Reese Hospital. A chest consultant at the University of Illinois Hospital. A chest consultant to the Union Health Service of Chicago.

Q Are you a member of any organizations concerned with air pollution?

A Yes, I pointed out I'm medical director of the Tuberculosis Institute of Chicago and Cook County. I'm a Fellow in the American College of Chest Physicians. A member of the Royal Society of Health, National Thoracic Society, American Health Association. All of these are concerned with this problem.

Q Do you hold any memberships on any city, state or national committees concerned with air pollution?

A Yes, I sit on the Committee of Chicago's Technical Advisory Board on air pollution. I sit on the Air Quality Standard Commission on the Board of Health of the City of Chicago. Consultant to the Attorney General, State of Illinois. I'm the head of a task force for the Lieutenant

Governor, and on the Technical Advisory Committee of the State of Illinois Air Pollution Board.

Q Dr. Carnow, have you published any articles or other studies on the problems of air pollution as related to health?

A Yes, I have. I have been conducting research on air pollution and its health effects for the last six or seven years, and have published fairly extensively on this.

MR. SIEGEL: Will the Reporter please mark this Exhibit as Plaintiffs' Exhibit No. 29, for Identification.

(WHEREUPON, Plaintiffs' Exhibit No. 29, for Identification, was so marked.)

MR. SIEGEL: Q Now, Dr. Carnow, I show you a document which have been marked as Plaintiffs' Exhibit No. 29, for Identification, and ask you if you are familiar with that document?

A Yes, I am.

Q What is that, sir?

A It's my curriculum vitae.

Q What is that?

A It details my career, my appointments and some of the publications which I mentioned. I did not mention that I also sit as a member of the National Academy of Science Panel on Air-Borne Cancer Producing Substances, and have acted as consultant to the National Air Pollution Control Administration on Sulphur Dioxide and Carbon Monoxide.

MR. SIEGEL: Your Honor, I ask that Plaintiffs' Exhibit No. 29, for Identification, be admitted as Plaintiffs' Exhibit No. 29.

MR. CONZELMAN: No objection.

THE COURT: Plaintiffs' Exhibit No. 29 is admitted in evidence.

(WHEREUPON, Plaintiffs' Exhibit No. 29, for Identification, was received in evidence as Plaintiffs' Exhibit No. 29, in evidence, and is in words and figures as follows, to-wit:)

MR. SIEGEL: Q Dr. Carnow, during the course of your professional activities, have you studied the effects of noxious gases upon health?

A Yes, we have. We have been conducting a number of studies of the effect, particularly of sulphur dioxide on health. We have been following a group of 560 people with chronic lung diseases. Other studies and the effects on infants, on the elderly, and have been carrying out studies of the possible association of death with air pollutants in the City of Chicago.

Q Are you familiar with the Clavey Road treatment plant in Highland Park, Doctor?

A Yes, I am.

Q Do you know what type of sewage treatment process is involved in that plant?

A Well, I know it's an activated sludge plant, yes. I'm not an engineer.

Q Are you familiar with gases which are produced and emitted into the atmosphere as a result of activated sludge plants, such as the Clavey Road treatment plant?

A Yes.

Q Would you tell the Court what some of those gases are that are produced, and other substances other than gas?

A Well the -- we're concerned about the two problems in this regard: One, gases which are produced from the sewage and from the burning of digestive gases, so that there is production of nitrogen compound, including NO^2, a nitrogen compound and sulphur dioxide.

Also there are emissions of hydrogen sulphi, which is a poisonous gas. In addition, a number of materials are used which are toxic when emitted into the air. As for example, ozone, which is highly toxic. And chlorine, which is used in the sewage process.

We are further concerned about air-borne materials, particulate, a matter used in the burning, and viruses and bacteria which are thrown into the air and carried on these particulates.

Q Dr. Carnow, I show you Plaintiffs' Exhibit C, and direct your attention particularly to Pages 2 and 3, and ask you to examine that document with respect to scientific data which is contained thereon.

Now, Doctor, assuming a sulphur dioxide concentration in excess of .2 parts per million. What is your opinion with respect to the effect of the emission of such sulphur dioxide upon health in those residents of the area of the sewage treatment plant?

A Well, at those concentrations, they are negative health effects on a significant part of the population. In the criteria documents which the Federal Government released, and which is a compendium of what is considered by them to be reliable research evidence, they have arrived at a level of 0.11 parts per million, which is considerably lower than the one you are talking about, at which health effects begin to appear.

In our study of chronic bronchitis in Chicago, we found that in males, 55 and over, had twice as many days of acute chest illness when the levels were .2 parts per million, as when they were .04 parts per million. We also found, in following a group of individuals, that at these levels there was a significantly higher incidence of acute respiratory symptoms, including cough, shortness of breath and the development of infection. This, I assume, is what it says, maximum ground level concentrations from the plant. Since, of course, there will be other sources producing this material in the air, such as coal burning and wood burning and others, one can expect that this number will be even higher.

At these levels we have found, particularly in areas where people are not used to high levels of pollution, that there are excess deaths. At least in the City of Chicago, at these levels, from heart disease and from lung disease in males, 55 years of age and over. Now this deals -- you've asked only about a single gas, but there are others which are emitted, and these gases particularly are additive, or what we call sinalgistic, in that they have a similar effect and, therefore, they compound and intensify each other's effects.

Q What are the other gases that would be emitted from the sewage treatment plant that would have the effect you just described?

A Well, nitrogen oxide, which is a -- in fairly highly concentrations, a deadly gas. There is a disease, as a matter of fact, called "silo phyllas" disease, where farmers go into a silo for ten days after they put corn in, who are exposed to this gas, and a high rate of severe bronchitis and considerable number of deaths.

In addition, hydrogen sulphide is a very noxious gas. There was an episode in Costa Rico where some of this gas escaped from some of these tanks --

MR. CONZELMAN: I object to this unless he was in Costa Rico.

THE WITNESS: No, I was not there.

MR SIEGEL: Your Honor, if he has knowledge of this.

THE COURT: I think that what the doctor is testifying to is the injuriousness of gas. I think the general statement is that if it's injuriousness to health, is sufficient.

MR. SIEGEL: Q Are you familiar with the proposed expansion of the Clavey Road plant?

THE WITNESS: A I'm familiar with what is proposed.

Q Will this expansion increase the amount of noxious substances which are emitted into the atmosphere?

A I would expect that, yes, that they would, since the amount -- certainly the amount of digestion is certainly going to increase. Thereby, a factor related to the increase in sewage, as well as the use of ozone.

Q Now, Doctor, if ozone is used to kill odors in the sewage treatment plant, what are the effects of the use of ozone upon the health of citizens who may be in the area?

A Well, there are two effects that we are concerned about. Ozone is probably the most noxious of the gases that we're talking about. It's an extremely irritating gas. It, in addition to causing acute inflamatory changes in the air passages, it lowers resistance to acute illness. We have studied a number of workers in an operation called "Migwielding" who are exposed to high levels of ozone, and these men have extreme difficulty with sinus trouble and acute bronchitis and so on. Ozone is also a radial remittic substance, which means that it will, even at relatively low levels, of course, sphering of red blood cells and chromosone breakage, means at these concentrations, has the same effects as X-rays. And further, the effect of the ozone is to produce a very active compound, which in themselves are extremely irritating, and which may themselves cause difficulty with the lungs. As a matter of fact, we have good reason to suspect that some of these may be cancer-producing substances, although we have not proved this in man.

Q Now, directing your attention again to Plaintiffs' Exhibit No. C, which is a letter from Mr. Quon, consultant to the City of Highland Park, I ask you whether the chemical substances which he reports as being produced, will have dilatorious effect upon public health?

A Yes. Again, I think that he's talking about maximum figures. But, again, what we are talking about is not one gas, but multiple gases. We are talking also about these being added to a community where these gases are being produced from other sources. So that this is the amount that is going to be added. If this amount, at the quantity which is described, is hazardous to health, and there is excellent documentation in our study and others, that it is, that if you have these added to others in the community, under conditions of inversion and stagnation, you create a situation where there is a serious health hazard.

If in addition you have bacterial and viral particles being blown by the wind, by droplets, which it does, there are significant studies which show that this is indeed the case, then you have a -- and as levels of E. coli, for example, have been fairly high, even up to .8 miles from the plant when the wind is blowing at a fair rate. So you have the conditions in this situation, with the amount of sewage treatment that you're talking about, a situation where you have irritant gases which diminish the resistance of the air passages of the lungs, and diminish the lung's ability to protect itself against bacteria, and a situation also in which bacteria are also created, so that you have a combination of substances which, in my opinion, may be very dilatorious to health.

Q What would be the effect of the So2 and the ozone on the increase in the amount of bacteria in viruses?

A I'm sorry. I didn't understand.

Q What would be the effect of the So2 and the ozone and the increase in the amount of bacteria and viruses upon the health of the citizens in the immediate area?

A Well, again, in terms of mechanism, the ozone and the sulphur dioxide, both act to destroy the ability of the lungs to resist infection. There is -- the defense mechanism of the lung is what we call the pneumocilia apparatus. Tiny hairs that operate in the air passages and remove impurities and bacteria. In addition, sitting on this -- these hairs, is a very thin layer of mucus, which is then escalated out. Kind of a little blanket which entraps impurities. Well, these cases will, of course, paralyze -- will cause paralysis of the cilia, so they don't act as an escalator, and ultimately will destroy them. And in addition, the mucus, because of irritation of these gases, is produced in much greater quantity so that as this process goes on, there is a closing or blocking of air passages of the lung. There is a flooding of the air passages with mucus, so that even though these tiny hairs beat, they don't move anything.

And if you superimpose on this destroyed protective mechanism, and introduce pathogenic bacteria and viruses, you certainly can look to a much higher rate of acute illness. This is what occurred, we believe, in our 560 bronchitics, and the others that we have studied.

Q Does the amount of humidity in the air affect the consequences and the release of these substances?

A Yes, it certainly does with increased humidity the effect of So2 tends to be greater, because under humid conditions, particularly when there is particulate in the air containing manganese or iron, and in these areas there is such, and in almost all industrial cities there are, and their environs, you get the rapid formation of sulphur trioxide and sulphuric acid, which is an extremely irritating acid.

Q What is the effect, Doctor, of small amounts of carbon in the air such as indicated will be released here?

398 A Well, carbon acts as a carrier. The sulphur dioxide, in addition to the -- its action in the

manner in which you just described, also can be absorbed. They are attached to these tiny particles. And if these particles are very small and they tend to be very small, they get into the lung and these gases are slowly released.

In addition, we think these particles have an effect by themselves on some of the clearing mechanism of the lung. Particularly on a scavenger cell, which removes impurities called micromyces. These materials tend to inactivate them.

Q Now, Doctor, are the levels which will be emitted of pollutants, as indicated in Plaintiffs' Exhibit C, in your opinion, represent health hazard to the surrounding area?

A Yes, I believe that at these levels, under certain conditions of stagnation or inversion, they represent levels at which a significant number of individuals in the population become ill. These are levels considerably above the .11 at which health effects were noted in our studies, in the Rotterdam studies, the London studies and others.

Q If there is any breakdown in the operation of the sewage treatment plant, either mechanical or human failure, would this result in a greater concentration of these pollutants being emitted into the atmosphere?

A Well, I presume it would result in a greater concentration on greater bacterial and environmental pollutants. Certainly in a greater concentration of the other digestive gases. Now how much of those get out into the air, I don't know. It would depend on the engineering capability of the plant.

Q Based upon your knowledge and experience, Doctor, do you have an opinion as to whether or not the expansion of the Clavey Road treatment plant, as proposed, represents a threat to the health of the community and the surrounding area?

A I certainly do. I think an 18-million gallon a day plant in an area such as that represents a serious threat to the health and the welfare of the individuals in that community.

Q How far away could the public health be threatened by the operation of this sewage treatment plant?

A Well, it depends on the kind of inversion and so on. It would add most to its immediate surroundings, and depending on how much wind there was, would add to other areas. In terms of the bacteria and virus problem, this would relate to the direction in which the wind is blowing. And, as I say, studies have shown that up to almost a mile away, fairly high concentration of E. coli and viruses. In relation to --

MR. CONZELMAN: Objection. We don't have the studies. I don't know what area he is talking about, your Honor.

MR. SIEGEL: Q Would you be a little more specific, sir, with respect to studies in the area?

MR. CONZELMAN: I object to this. I want to see the studies.

MR. SIEGEL: Q Do you have the studies, Doctor?

THE COURT: I don't think there is anything about the study in evidence, is there?

MR. SIEGEL: Q Do you want to find me the study you are referring to, Doctor?

THE WITNESS: A Yes.

Q Doctor, is your opinion based upon your own research and your own activities?

A Yes, it is.

Q Are you familiar with the research of other students of this field of medicine?

A Yes.

Q I direct your attention to an article which appears in Science for September 18, 1970, and ask you whether you are familiar with the study which commences on Page 1218 of that particular issue?

A Yes, I am.

Q Will you describe what that study is?

A Well, it's a study of the Coliform Aerosols Emitted by Sewage Treatment Plants, and they revealed the special filters at various points from the plant, with measured inflow of air into the filter, and they found that coliforms were emitted and were sampled to a distance of 1.2 kilometers down wind.

Q Would that confirm your own opinion and observation in this field?

A Yes, it would. We know, and many, many studies, including some that we have done with aerosols, we know that viruses are easily carried and transmitted by particles and vapors. Studies which have been carried out by Lorenzo at the Cook

County Hospital, in which I have participated, show that this is the case.

Q Now, Doctor, are all the pollutants which you described as being dangerous to health, odor producing?

A Some of them are. It depends on the concentrations. So2, unfortunately, is not odor producing until it becomes a very serious hazard. Some of the others are more odor producing, such as mercaptans and hydrogen sulphide, and so on.

Q Just to recapitulate, will you tell us specifically the substances which are produced by the operation of an activated sludge sewage treatment plant of the type proposed here which, in your opinion, are dangerous to the public health?

A Well, the odors are a nuisance, and I have not studied what their effects on health are. They certainly affect well-being, and if one accepts the definition of health that the world organization gives, a state of well-being wherein individuals can function and enjoy health and property, then the odors certainly would affect health by this definition.

In addition, the materials which are given off, which are hazardous to health in adequate quantities, it depends on the individual breathing it. There is a different effect on a 25-year old than a new born or an old person with heart and lung disease. Those are the people who suffer the most, and have the greatest difficulty with these materials. But the pollutants consist of the odors I mentioned, hydrogen sulphide, So2, nitrogen compounds, ozone, sulphur dioxide, particulate matter and the bacteria and viruses which I already discussed.

Q And what portions of the sewage treatment plant produce these substances?

A Well, some of them are produced by the introduction of these chemicals in the treatment process. I also didn't mention the free radical, those very active substances which are produced when ozone is introduced in relation to hydrocones. But so that some are produced in the treatment. Some are produced from the digesting process. Some are produced because they are introduced into the treatment, like ozone and chlorine. Others are a result of the

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Q Does the storage of sewage, mixed with storm water, in retention basins for an effluent, and the effluent lagoon, constitutes sources of pollutants?

A Well, I again, I have not measured the levels in these areas, and I don't know what they are. But digestion of these materials do produce noxious gases.

MR. CONZELMAN: Objection. The witness already said he hasn't measured and doesn't know.

THE WITNESS: I said I didn't know the quantitites, sir.

THE COURT: Well, the answer will stand.

MR. SIEGEL: I have nothing further of this witness.

CROSS EXAMINATION

BY MR. CONZELMAN:

Q Dr. Carnow, would you tell us when you were retained in this case?

A When I was retained? You mean when I was asked to appear?

Well, I don't recall. A number of weeks ago, I guess.

Q Now, you're on some committee or commission for the Attorney General. Are you aware of the fact that the Attorney General of Illinois has filed suit against the district right in this court, to get them to go even faster onthis very project?

A I'm not --

MR. SIEGEL: Objection to that. That isn't what the Attorney General filed suit for. He filed suit to prevent the North Shore Sanitary District to continue pollution.

THE COURT: Objection sustained.

THE WITNESS: I said I consulted for, and consulted with. I do not work for the Attorney General. I have nothing otherwise to do with the Attorney General.

MR. CONZELMAN: Q Now all of these gases and what not you described, aren't they present with any sewage treatment plant?

A Yes.

Q They are present right with the plants we have there now, aren't they?

A Yes.

Q Are you familiar with the north side plant operated by the Metropolitan Sanitary District?

A Somewhat familiar with the plant.

Q That is a huge plant, much bigger even than that expanded plant?

A Yes, it is.

Q And one would expect those gases to be present likewise?

A Oh, yes. It's a terrible polluter.

Q In more quantity?

A Yes, the more quantity of sewage, the more quantity of gases.

Q They don't have any covers on the north side plant, do they?

A No, I don't think so.

Q Now, E. coli, you spoke of that. Is that a disease producing organism?

A It's a pathogen. Yes, of course. But more important than that, it's a marker. The reason that E. coli was measured is because it's easy to measure. But if E. coli is in the air, it means there are others. It's one way, for example, of measuring contamination of water. And the reason

E. coli is used to measure contamination of water is because we know if E. coli is in the water, that other bacteria are accompanying it, so we can extractulate from that, and know that the water is polluted.

Q It's merely an indicator, however. It's not a disease producer itself. Isn't that correct?

A Well, E. coli is. You inject it under the skin, it certainly would give you trouble.

Q But if you use it in this area, you used it as an indicator, is that correct?

A In this study, yes, because it's easy to measure. But it is a pathogenic organism.

Q The reference of two parts per million of sulphur dioxide in Exhibit C, which is Dr. Quon's letter, that is a maximum, is it not?

A Yes.

Q Now, as I understand it, the standards that we refer to are not maximums, but they are 24-hour averages. Isn't that correct?

A It depends on the standard you are talking about. We have hourly averages, 24-hour maximums, one percent a year, annual averages and so on.

Q Well, let's go on. In his letter, the sulphur dioxide standard is one hour per year. Isn't that right?

A No. According to him, one percent of the days per year, which is three and a half days per year, is .1 parts per million, which is less than half of what you are talking about.

Q Then read the next line, sulphur dioxide, one hour per day. Isn't that right?

A That is the maximum permissible level, yes. One hour per year.

Q Dr. Carnow, is there actually anything definitive in this field?

MR. SIEGEL: I object to that, your Honor. I don't know what that question means.

THE COURT: Restate your question.

MR. CONZELMAN: Q Isn't this the field that we actually don't know a lot about?

THE WITNESS: A That's very true.

MR. CONZELMAN: That's all the questions I have.

REDIRECT EXAMINATION

BY MR. SIEGEL:

Q Dr. Carnow, would you recommend a sewage treatment plant serving 18-million gallons a day, be located in a residential area?

A No. I think it's -- as I stated, I think it's a hazard to health. I think the fact that there are other plants which are worse, only increases my concern.

Q Now, Dr. Carnow, I take it that you do know, even though there is a great deal of information we don't have, that the kind of emissions which you have testified to, are a threat to public health?

A There is no question about it. I think that we are, you know, we are at an early stage of our knowledge. I'm sure as our knowledge increases we will begin to find that smaller and smaller amounts are dangerous to health. But I think we certainly know enough to know that the levels which are discussed here --

Q You say "here." You are talking about this?

A Yes, in this document, are by themselves a hazard. If the maximum is .231 parts per million of sulphur dioxide and the standards are for 24 hours for three and a half days a year, you are talking about a level which is two and a half times what is recommended, and levels which we have found not only cause disease, or increase in disease, particularly in those that already have it, but cause an increase in deaths in the population.

Now, if you add to that the pollutants which already exist in this community, you are talking about a potential level which on three or four days a year, according to this, would be hazardous. We have found acute effects, increased deaths when compared with the day of pollution. Acute respiratory illness, a doubling of respiratory illness on the same day as the pollution. So we are talking about an effect that is not long term at these levels, but an effect which occurs within hours, eight hours, sixteen hours of exposure, and it doesn't require many days of exposure, and not for a large portion of the population.

Q Is the fact that there is present a sewage treatment plant there, in your opinion, indicate that the plant should be expanded?

A No, I think that, again, the biological systems in nature can handle a certain amount. Now I don't know what the effects of this plant are on the health of the people, but you have a plant which produces a certain amount of material. Again, the air and the winds and so on can, up to a point, begin to clear. When you talk about processing an 18-million gallon a day plant and producing levels of So2 that you're talking about, you're talking about a clear and present danger for that community.

MR. SIEGEL: Nothing further.

MR. CONZELMAN: No more questions.

THE COURT: The Court has a question, doctor.

THE WITNESS: A Yes, sir.

THE COURT: Maybe two. Did I understand you to testify that downwind from one of these plants, that this gas can be dangerous for an area up to seven or eight miles?

THE WITNESS: A No, sir.

THE COURT: What did you say?

THE WITNESS: A I was talking about -- see, the 414 gas, the danger of the gas depends on the meteorological conditions. On the high humidity there is a much higher production of sulphuric acid. Where you have stagnation, what we call an inversion layer, and don't have vertical exversion, or winds of 6 miles an hour or less, then you get high concentration in the area. And this acts like an umbrella over a fairly large area. What I was talking about was up to .8 miles, they found fairly high concentrations of bacteria. Now, they did not study viruses. Viruses are much smaller particles which tend to travel much further.

MR. CONZELMAN: May I ask a question in that regard? I gather then the viruses could be beyond the .8 miles?

THE WITNESS: A Yes, sir.

MR. CONZELMAN: Q Does that have to do with the size of the treatment plant?

THE WITNESS: A Yes, I believe that it does.

MR. CONZELMAN: Q Well, in connection with the north side plant in Chicago, it would be miles and miles, wouldn't it?

THE WITNESS: A Very possibly. I haven't studied that. But very possibly, yes.

MR. CONZELMAN: That's all. Thank you.

(Witness Excused.)